

TOWARDS AN ECO-JUST SOCIETY

Bas Wielenga

Community Health Cell**Library and Information Centre**

367, "Srinivasa Nilaya"

Jakkasandra 1st Main,

1st Block, Koramangala,

BANGALORE - 560 034.

Phone : 553 15 18 / 552 53 72

e-mail : chc@sochara.org

QSFVIS(5)C
CED BAN

4. 601-

TOWARDS AN ECO-JUST SOCIETY

Bas Wielenga

Centre for Social Action
Bangalore

AVAILABLE FROM:

Centre for Social Action

849 Ramdev Gardens

Kachanurhalli,

TOWARDS AN ECO-JUST SOCIETY

Bas Wielenga

Centre for Social Action
Bangalore



AVAILABLE FROM:

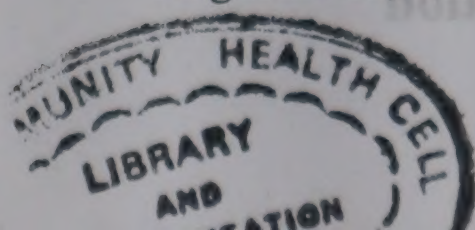
Centre for Social Action,
849 Ramdev Gardens,
Kacharakanahalli,
BANGALORE – 560 084,
India.

PRICE: Rs 60 — Abroad: US \$ 6

Published in 1999 by Thomas K.C., on behalf of Centre for Social Action, 849 Ramdev Gardens, Kacharakanahalli, Bangalore – 560 084, India.

DTP by Mrs. Mary Christina Rani Peter, Centre for Social Action.

Printed by St. Paul's Press Training School, Mariagiri, Nagasandra, Bangalore – 560 073.



LE-100

08346

299

ACKNOWLEDGEMENTS

This book is meant as a guide for people who are concerned about the deepening eco-crisis, who want to understand its causes and are looking for practical responses to it. It is written by a non-expert on the basis of the information and analysis available in various journals and books, and of his interactions with movements which have taken up eco-issues.

This study-guide could not have been written without the set-up and facilities of the Centre for Social Analysis in Madurai in which I am one of the staff members.

Special acknowledgements should go to Ms. Adele D'Cruze and Mr. John Wilson for typing and retyping, and for locating materials. Hugo Gorringer has kindly gone through the manuscript, removing mistakes in the use of language without trying to impose a rigid Oxford standard, and giving valuable suggestions for improving the text.

The many footnotes are not meant to document academic studies. They are a tribute to the breadth and depth of the public discussion, and a guide to sources of information and analysis. The journals and documents quoted are accessible in the Centre for Social Analysis, 37 Janaki Narayan Street, Somasundaram Colony, Madurai - 625 010. The book of Gabriele Dietrich and Bas Wielenga, "Towards Understanding Indian Society", is available at the same address.

I am also grateful to John Desrochers and the team of the Centre for Social Action in Bangalore for inviting me to write this book.

Bas Wielenga

ABBREVIATIONS

BARC	Bhabha Atomic Research Centre
BJP	Bharatiya Janata Party
CBD	Convention on Biological Diversity (UN)
CFCs	Chlorofluorocarbons
CSE	Centre for Science and Environment
DDT	Dichlorodiphenyltrichloroethane
DNA	Deoxyribonucleic acid
e.g.	for example
EPW	Economic and Political Weekly
FCCC	Framework Convention on Climate Change (UN)
GATT	General Agreement on Tariffs and Trade
GMOs	Genetically Manipulated Organisms
GOI	Government of India
G-77	Group of 77
IPCC	Inter-govt. Panel on Climate Change
IMF	International Monetary Fund
MSSRF	M.S. Swaminathan Research Foundation
NAFTA	North American Free Trade Agreement
NAPM	National Alliance of People's Movement
NBA	Narmada Bachao Andolan
NFF	National Fishworkers' Forum
NGO	Non-Governmental Organisation
OECD	Org. for Economic Cooperation and Development
p.c.	per capita
PCO	Programme for Community Organisation
PVC	Polyvinylchloride
SU	Soviet Union
TNC	Transnational Corporation or Company
UCIL	Union Carbide India Ltd.
UN	United Nations
UNDP	United Nations Development Programme
WB	World Bank
WHO	World Health Organisation
WTO	World Trade Organisation

Notes

et al.	and others
ibid.	in the same book, chapter, page, etc.
no.	number
op. cit.	in the work cited

CONTENTS

Acknowledgements	5
Abbreviations	6
Introduction : Facing the Eco-Crisis	9
Chapter I : Aspects of the Eco-Crisis	12
A. Pollution	12
1. Air: From Breathing Troubles to Climate Change (kitchen fires, traffic fumes, chimney smokes, acid rain, ozone holes, global warming); 2. Poison: From Pesticides to Toxic Waste (toxic waste, the problem with plastics, pesticides); 3. Cot-Deaths and Ghost Riders	
B. Speeding up the Spending of Precious Resources	26
1. Energy Crisis; 2. Deforestation; 3. Diminishing Biodiversity; 4. Loss of Land (erosion/depletion, alienation, globalisation, ecological reorientation); 5. Pollution and Depletion of Waters (depletion, pollution, unjust distribution)	
C. Taking Known and Unknown Risks	37
1. Nuclear Radiation; 2. Genetic Manipulation; 3. Psychic Numbing	
D. The Need for Basic Reorientation	45
Chapter II : Various Responses to the Eco-Crisis	47
A. Different Perceptions	47
1. Rural Poor, Urban Poor, Omnivores; 2. Women, Men; 3. City Dwellers; 4. Scientists, Bureaucrats	
B. Different Types of Action	50
1. Cleaner Technologies, Greater Efficiency; 2. Wildlife Protection; 3. Scientific and Financial Eco-Sponsorship; 4. Towards Rural Survival and Revival (local experiences, banking on biomass, delinking from global money-minded circuits); 5. Struggles and Movements	

Chapter III : People's Movements Raising Eco-Issues	73
A. Struggles over Resources	73
1. Protecting Forests; 2. Resisting Destructive Development;	
3. Protecting Waters; 4. Resisting Biopiracy (peasant movements, conservation efforts, informing & lobbying)	
B. Struggles against Hazardous Industries	89
1. Bhopal and After (a poisoned world, justice today, people's struggle); 2. Waking up to the Hazards of Nuclear Energy;	
3. Pioneer Struggles against Globalisation of Industrial Pollution (ousting DuPont, the Enron story); 4. Unmasking the Manipulators and Terminators of Life	
C. Basic Issues Emerging	105
1. Energy Waste; 2. Debt-Driven Destruction; 3. Biased Science and Technology; 4. Can Capitalism Solve the Eco-Crisis?	
Chapter IV : Conflicting Ideologies	117
A. Basic Trends	117
1. Deep Ecology; 2. Gandhian Motives; 3. Social Ecology;	
4. Eco-Marxist Explorations; 5. Eco-Feminist Perspectives	
B. Basic Issues	134
1. Anthropocentrism; 2. Religious Motives; 3. The Question of Needs	
Chapter V : Alliances for Eco-Justice	151
Introduction	151
1. Eco-Logic (the threat of eco-imperialism, the need for red-green alliances); 2. Eco-Justice; 3. Eco-Politics	
Notes	164
Bibliography	187

INTRODUCTION

FACING THE ECO-CRISIS

There have been warning voices from the early days of the industrial revolution. But they were considered as reactionary. Technological progress and economic growth, it was said, would take care of the environmental problems. Meanwhile the problems have multiplied and are merging into global threats. The progressively increasing amount of toxic emissions contributes to global warming, which causes rising sea levels and climatic changes with potentially disastrous effects. In the course of economic development innumerable chemical substances produced by the chemical revolution have been released and have entered into our environment, into the food chain, and into our bodies, posing a threat to health. They even affect the ozone layer, causing dangerous holes in it.

At the same time, as a result of rapid economic growth, we are facing the dwindling of resources, of fossil fuels, of raw materials and – most importantly – the decline of biodiversity, the erosion of fertile land and the increasing scarcity of water for irrigation and drinking purposes. Apart from pollution and the decline of limited resources there is a third aspect to the looming eco-crisis, and that is the expanding scale of risks which are implied in the rapid introduction of new technologies into the production process. The most notorious examples are nuclear energy – Chernobyl – and biogenetic engineering.

The various dimensions of the eco-crisis will be discussed in some detail in the first chapter. What may need to be clarified prior to that, and prior to a presentation of various eco-movements and their agendas, is the question raised from different quarters whether it is right to give such a weight to the ecological problem. There is a widespread understandable worry that the agenda of ecologists and eco-movements tends to displace other urgent problems such as social justice concerns. It is a problem indeed that some eco-movements and eco-ideologues ignore social problems. They feel that all other

issues have become secondary as life on the planet earth is now in danger.

This becomes all the more problematic when the members of such movements are mainly of upper-class or upper-caste background, having no other big problems to worry about than clean air and a beautiful environment. They may demand the closure of polluting industries, but who will give other jobs to the workers in those units? They may agitate for the protection of tigers and monkeys and rare butterflies, but where should the adivasis go who are driven out of the forests which are turned into wild-life reservation parks? Others may work for the preservation of traditional seeds, for local water management and organic farming. But that does not help landless Dalits. Why should they bother about resources to which they have no access anyway?

Ecologists may denounce “economic growth” as the cause of the eco-crisis, but what does that mean for “developing” countries? Is it not “eco-imperialism” when “developed” countries demand restrictions on the cutting of rainforests in Third World countries, which need to finance their loans and the modernisation of their economy? Do the poor not have the right to catch up?

Eco-movements will have to address such questions if they want to mobilise people on a broad base for a radical reorientation in face of the eco-crisis. Fortunately this is understood by a growing number of people, as will be discussed later. But independently of such spreading insights it is crucial for the poor to acknowledge that the eco-crisis cannot be overcome only by exposing the deficits of eco-movements. The crisis is not an invention of the rich countries or of Brahmins in India, it is a harsh reality to which the rich have contributed the most and which is bound to affect the poor first of all and most of all.

The poor are the first victims of pollution of air and water, of deforestation and erosion, of floods and droughts. They are more dependent on what nature provides directly. They have less or no protection against the hazards of pollution. They live under the most unhealthy conditions. Women have understood more quickly than men that the protection of the environment is a matter of life and death for the poor. They have to provide for water, fuel and fodder. If the forest

is cut down for industrial purposes, if the common lands are neglected or privatised, if the factories pollute water and air, they feel it in the increasing burdens of the daily struggle for survival. Men may take more time to realise this as they rely more on cash-earnings – maybe even from cutting trees – to see them through.

A few examples can illustrate this. Adivasis and poor subsistence peasants are hit most by big so-called development projects as the dams in the Narmada River. Dalits do the most polluting jobs in tanneries and the like, and thus are doubly hit by unhealthy work conditions first and by closure for ecological reasons next. Hazardous waste is not dumped where the rich live, but the poor are often forced to live close to it. Eco-justice movements in the USA have accused the authorities of “eco-racism” as highly poisonous waste has been dumped in the areas where indigenous people live. Similarly, rich European countries are exporting their hazardous waste to Third World countries, including India. The global climate change will affect all, but the rich class and rich countries will have more means to protect themselves against rising sea-levels, hurricanes and other threats. We may conclude that it is in the interest of the poor to fight for a clean environment, clean air and water etc. as a basic human right.

Having this in mind we have chosen as title of this book, **Towards an Eco-Just Society**. Ch. 1 surveys the main aspects of the eco-crisis. Ch. 2 discusses different types of perceptions and action. Ch. 3 presents a range of people’s movements which have raised eco-issues. Ch. 4 goes into various ideological perspectives. Ch. 5 goes into the question of viable alliances which are needed in the struggle for the transformation of society.

CHAPTER I

ASPECTS OF THE ECO-CRISIS

A. POLLUTION

1. Air: From Breathing Troubles to Climate Change

The art of making fire has been one of the fundamental discoveries in the history of human civilisation. Of course, we need fire, but we also see that it places a burden on the environment, as fuel has to be taken from it and various gases and particles are released into the atmosphere. Thus we find age-old and new forms of air pollution today. One of the crucial differences is that the fires which modern civilisation is stoking are on such a scale that they threaten to affect even the climatic conditions for life on earth. Institutes like the Centre for Science and Environment (CSE) and eco-movements are trying to address both old and new forms of pollution problems.

1. a. Kitchen Fires

The Second Citizens' Report published by the CSE in 1985 begins its chapter on air pollution with the dangers to which poor women are exposed in *smoke-filled kitchens*. The age-old practice of cooking on wood, dung and crop residues continues in upto 90% of the households in rural areas and urban slums. Studies have shown that their exposure to the dangerous pollutants of wood smoke in badly ventilated huts could be ten times higher than recommended limits and could reach the equivalent of smoking 20 packs of cigarettes per day.¹ This exposure will be one of the reasons why the death rate for women is higher than for men.

Several solutions are proposed and tried out, from introducing smokeless chulhas to better ventilation of the houses, but this does not reduce the overall emission of harmful substances in the atmosphere. Biogas would make a significant difference, but is limited to richer households. It requires a redistribution of resources or a co-operativisation. In other words, the struggle for a more healthy

environment, especially for women, has to go together with the struggle against poverty.

1. b. Traffic Fumes

More recently the CSE has highlighted the threats to health especially in urban areas due to the rapid increase of *motorised traffic*. What its report in 1984-85 foresaw² has come true. The cities are choked by four-, three-, and two-wheelers emitting toxic substances which cause a wide range of health troubles, especially respiratory diseases and cancer.³ In 1996 the CSE published its 3rd State of the Environment Report focusing on this threat. The title says it all: "Slow murder. The deadly story of vehicular pollution in India".⁴ The magazine of CSE, Down to Earth has followed it up and informs about its campaign against this health hazard.⁵

A particular damaging factor is that 90% of the vehicles on India's roads are having lead in the fuel they use. Lead is banned in USA, Japan, Brazil, South Korea and other countries because of its harmful effects. It can cause brain damage in children, leading to lowering of IQ, hyperactivity and lack of concentration. City dwellers are exposed to rising levels of suspended particulate matter which in certain areas of Delhi, one of the most polluted cities of the world, was found upto 9 times higher than the limit set by the WHO.⁶ The widespread use of diesel – which pollutes much more – contributes to the sickening result of thousands of premature deaths. According to a World Bank study in 36 cities in India 40,350 humans were killed by air pollution in 1991-92 and the number is increasing by 28% per year.

1. c. Chimney Smokes

Another major contribution to air pollution affecting the general public comes from industry. The rapid increase can be illustrated with figures from Mumbai. Transport in 1978 contributed 399 metric tonnes per day to air pollution, and industries 438 tonnes. This is the toxic price for motorisation and industrialisation, causing bronchitis, asthma and so on.⁷

It is obvious that the first to suffer from industrial pollution are the workers in the factories and those who live in the vicinity. The Union Carbide accident in 1984 in Bhopal which killed so many people and

which has affected the life and health of thousands of people till today has made visible what otherwise is going on in hardly visible ways, the slow death of workers whose bodies are exposed to known and unknown dangers. Occupational health studies document the price in terms of workers' health which is paid for the production of textiles, chemicals, coal, steel and what not.

1. d. Acid Rain

Industries, vehicles and coal-based power plants cause further damage in the form of acid rain which destroys forests and lakes. The tonnes of nitrogen oxides and sulphur dioxide which they release into the air are transformed into nitric and sulphuric acids which come down with rain.⁸ These attack the health of trees. Forests start dying from acid rain.

1. e. Ozone Holes

Another deadly dangerous form of pollution caused by modern industry has been identified after the "discovery" of the Antarctic ozone hole in 1982. Humankind is indeed moving into a new phase of discoveries, namely the unexpected side-effects of earlier discoveries which had raised such happy hopes of unlimited progress. Who does not welcome the advantages of refrigeration? But now we know that the CFCs (chlorofluorocarbons) used in refrigeration and in aerosols are eroding and destroying the ozone layer in the stratosphere – 15 to 50 km. above the earth – which protects human and non-human life against deadly ultraviolet-B radiation.⁹

The scare was serious enough to persuade 139 countries to sign the first international environmental treaty, the Montreal Protocol of 1987 which was meant to reduce and finally phase out the production and use of ozone-destroying chemicals. The Montreal Protocol has had an initial positive effect, as production of CFCs got reduced and research into harmless substitutes got stimulated. Fortunately, eco-friendly alternatives are available and the problem can be contained.

However, USA-based TNCs and black marketers have undermined the efforts, causing a backlash.¹⁰ Representatives of Ozone Action (Washington) and Greenpeace (USA) report how a popular "ultra-

conservative" host of a radio show calls the ozone crisis a "hoax" before an audience of 20 mn people. It is interesting to note how those who want to continue destructive practices are called "conservatives", whereas those who plead and struggle for protection and preservation are considered "radicals". Powerful lobbies are at work. Car-producers who had no ready alternative for automobile air conditioners pressurised the Clinton administration to push for postponing the end of CFC production for a full year. US-based TNCs like DuPont use the backlash to undermine the strict implementation of the Protocol, by favouring HCFCs which are less harmful but not really as harmless as earlier assumed. The World Bank, advised by TNCs, favours such halfway "solutions" instead of cyclopentane which has no ozone-depleting effects at all.

All this happens at a time when scientists find alarming new evidences of ozone depletion, not only above the Antarctica and the Arctic, but also above Europe and North America. Countries like India and China have an excuse as their production and consumption of CFCs is far below the levels of the industrialised countries.¹¹ Yet it is in our interest also to quickly find ways to reduce the release of CFCs, to get eco-friendly substitutes for eco-hostile fridges and air-conditioners¹² and to find technical solutions for the safe disposal of old fridges. And, of course, we can immediately stop the use of aerosols and demand a ban on the sale of such unnecessary, harmful products.

1. f. Global Warming

The uncontrolled and unlimited release of gases in industrial production and ever-increasing global transport is pushing our planet into a global eco-crisis. This has become recognised as the problem of global warming. Greenhouse effects lead to rising sea-levels and climatic changes which will affect environmental conditions for agricultural production and the livelihood and health of millions of people around the world, first of all again the poor.

The "greenhouse effect" refers to the phenomenon by which the earth's atmosphere traps heat. Gases that cause such an effect are mostly natural compounds such as water vapour, CO₂, methane and

nitrous oxide. These are beneficial gases which are meant to keep the earth habitable. The problem is that their concentration has become so high that it causes an overall heating up which disturbs climatic balances. The over-production of carbon dioxide (CO₂) results mainly from fossil fuel combustion and cement manufacture, whereas deforestation indirectly contributes as less trees will trap less CO₂. Methane is released from landfills, coal extraction, oil and gas production, and to a lesser extent from wet rice agriculture and livestock production.¹³

The Inter-govt. Panel on Climate Change (IPCC) which brings together several hundreds of leading scientists has reached a consensus that the increase of greenhouse gases through human activity adds heat and that most probably – or certainly as many are saying – this will cause a reduction of sea ice, a rise in global sea level and probably also an increase of tropical storms. The IPCC has estimated that not less than an immediate 60% reduction in the emission of long-lived gases would be required to stabilise the atmosphere concentration, and to stop the dangerous warming up.

A Greenhouse Index Ranking showing the Percentage Share of Global Emissions gives the following selected figures: the USA emits 19.14% of the greenhouse gases, the former Soviet Union 13.63%, China 9.92%, Japan 5.05%, Brazil 4.33%, Germany 3.75% and India 3.68%. The average p.c. emission was (in 1991) 2.59 metric tonnes of CO₂. In the p.c. statistics the oil-producing countries are on top. The USA scores 9 times higher than China and 18 times higher than India.¹⁴

As in the case of the depletion of the ozone layer there has been an awakening to the dangers. During the UN Conference on Environment and Development in Rio de Janeiro in 1992, more than 150 countries signed the UN Framework Convention on Climate Change (FCCC). After more than 50 countries had ratified the treaty it became legally binding on March 21, 1994. The industrialised countries have to submit national action plans.

The follow-up meeting in Kyoto (Japan) in Dec. 1997, agreed with great difficulty on a legally binding Protocol on Climate Change which has yet to be ratified. It lays down a target of 5.2% reduction

of emission of greenhouse gases from 1990 levels, which is to be achieved between 2008 and 2012. The target is a compromise and far below what needs to be done. Yet, it means the recognition of the *necessity to reduce*, something which industrial lobbies refuse to acknowledge and countries like the USA are very reluctant to accept. Big business has formed a "Global Climate Coalition" consisting of US-senators, car-making companies, giant oil companies, coal industry and the like, to fight any reduction commitments. They vowed to prevent the ratification of such agreements. On the other side there is an Alliance of Small Island States (AOSIS) which are facing submergence if no significant reductions take place.

The OASIS countries represent not only their own interests which are urgent enough, as they face submergence by the middle of the next century, if nothing changes. All low-lying coastal areas are under threat. Not only the Maldives, but one third of Bangladesh would be in danger. One can imagine the migrant waves – following the tidal waves – which would reach high in the hills of North-East India. At present, official estimates reckon with a rise of upto half a metre till 2050. In case of a more pessimistic forecast of a 1 metre rise, 5,700 sq. km. of India's coastal areas will be affected.¹⁵

In this perspective it becomes evident that the Kyoto treaty is only a first step. Unfortunately even so it has severe flaws. It allows the trading of emissions, so that countries which have overshoot their targets can "buy" emission rights from other countries. Questions have also been raised about the practice of "joint implementation" which permits (rich) countries to finance emission savings elsewhere and take the credit for it.¹⁶

The Kyoto agreement does not impose cuts on countries like China and India, as the USA demands. It only appeals to developing countries to take voluntary measures which lead to reduction. Looking at the per capita contribution it is fair enough to resist any imposition. But it would be a foolish form of anti-imperialism to insist on the right to imitate the development model of the West, and contribute as long as possible to the global warming, instead of opting for solidarity with the AOSIS nations and taking a lead in developing alternatives. India has the potential to promote the utilisation of solar, tidal, hydel and biomass

energy. And why should we not voluntarily reorient transport policies, opting for public transport and promoting cycle rickshaws in order to reduce the rising pollution level which affect not only the climate, but also public health and – not to forget – the oil import bill which creates greater economic dependence? And why should we not move towards a more healthy, labour intensive and less energy intensive pattern of agricultural production?

It is amazing or rather disturbing to see how govts. at the same time acknowledge and ignore the problems humankind and the earth are facing. In Rio they signed the Convention on Climatic Change and in Kyoto a further Protocol. In between they put their signature under the GATT treaty at the end of the Uruguay round. This created the World Trade Organisation which is committed to the rapid expansion of global trade. Govts. act as if their right hand does not know what their left hand is doing, as if they do not know that more global transport will contribute to global warming. The same repeats itself at the national level: the environment ministry may be concerned about the protection of forests, and the health ministry about the threat to health caused by air pollution, but the industry ministers of the states compete to attract automobile industries with tax holidays and promote two-wheelers. The departmental separation of ecology and economy has to be overcome. It is high time to move towards a model of economic development which from the outset and in all respects takes ecological “costs” into consideration.

2. Poison: From Pesticides to Toxic Waste

One of the most striking and incisive factors in the evolving eco-crisis is the accumulating impact of the great strides which chemical science and, in its wake, chemical industry has made. Primo Levi, himself a chemist, gives a feeling of the fascination with chemical experiments and discoveries.¹⁷ Human ingenuity has penetrated the secrets of nature and human enterprise has used scientific knowledge to develop new products and chemical substances which by now have penetrated into so many aspects of daily life. Initially great hopes got attached to the miracles of plenty which chemical products were expected to bring about, especially in connection with the increase of

agricultural productivity for a rapidly growing world population. Chemistry appeared to be the answer to the pessimism of Malthus and his followers who predicted that soon the earth would not be able to feed the growing number of its inhabitants. More recently gloomy fears are spreading about whether or not the chemical revolution pushed on by enterprising and profit-seeking producers, is trapping us in a vicious circle of interacting poisonous substances. It was estimated in 1984 that about 50,000 poisonous substances are found in our environment, and upto 3000 substances are added every year. The death-dealing accidents in Bhopal and Manamata have dramatised the dangers lurking all around. Three types of dangers will be discussed: toxic waste, plastics and pesticides.

2. a. Toxic Waste

By now we all may be aware of the problem of toxic effluents from industries. They poison the water both of rivers and of wells – through the ground water – and thus affect safe drinking water supply, animal husbandry and agriculture. The toxins eventually enter into the food-chain and damage human health. Stories of problems caused by tanneries, dyeing processes, paper factories, and above all chemical industries multiply.¹⁸ One example may illustrate what is happening all over the place.¹⁹

An industrialist, O.P. Agarwal, set up a chain of chemical factories on illegally acquired grazing grounds in a village called Bichhri in Rajasthan in 1987. Within a few months the only ground water source for 400 agricultural families got totally polluted by H-acid effluents. Water in 90 wells turned red and became unfit for humans, cattle and agricultural use. Production of food and milk fell drastically. Adivasis lost work as landless labourers. Drinking water had to be brought by tankers. People have agitated and protested. The DM ordered closure in 1989. But the water is unusable till today. Struggles for compensation are still going on. Many more such examples could be given.

The problem of safe disposal of toxic waste has assumed gigantic proportions as chemical industries and the use of toxic chemicals in other industries have grown by leaps. Protest actions of affected people have grown in strength. In some cases this has led to the instalment of effluent treatment plants. But companies are reluctant

to incur costs on that account. Thus, illegal dumping of hazardous waste has become rampant. Industrialised countries where controls have become strict have taken to the export of hazardous, toxic waste.²⁰

For example, discarded vessels are brought for “recycling” to ship-breaking industries in India. It is a 2,000 crore business employing 40,000 workers who do the dirty work which exposes them and the environment to PCBs, lead, mercury and asbestos. This illustrates how hazardous waste trade for “recycling” involves a transfer of pollution from the rich to the poor. It is thus a toxic trade.²¹

Lawrence Summers, a World Bank Chief Economist, justified the practice of dumping hazardous waste in poor countries with the traditional market logic of business going where costs are lowest, combined with a new, perverse “egalitarian” argument that such countries are “vastly under-polluted”.²² The thriving trade with toxic trash has however been made illegal by the 1994 Basel Convention, which bans all exports of hazardous wastes from the rich OECD countries to non-OECD countries. This ban came into force on 31st Dec. 1997. Of course, powerful forces are trying to sabotage this multilateral environmental agreement which promotes justice as well as protection of the environment. Yet, it is a very important step forward. Before this ban the big polluters in the West responded to rising costs of waste disposal in countries which introduce strict environmental legislation by exporting hazardous waste. Now disposal has become more difficult and more expensive. That means, it becomes not only ecologically but also financially reasonable to find ways to reduce hazardous waste to begin with. The internalisation of disposal costs “makes the introduction of clean production methods and the elimination of toxic wastes correspondingly more attractive”.²³ When the cheap and dirty escape routes get blocked, real clean solutions have to be found. The world owes this landmark in international law to the firm solidarity of the G-77 group of developing countries, and to NGO campaigns. It was adopted as a measure to restrict “free trade” at a time when “free-trade” ideology was dominating otherwise (NAFTA, WTO, etc.).

The govts. of USA and Australia – and industry – have tried to undermine the Basel Ban. Some G-77 countries started wavering. In

1995 the Indian govt. responded to the lobby efforts by announcing that it was reconsidering the Basel Ban and might allow the import of hazardous waste for recycling. However, courts have upheld bans on such imports.²⁴ Attempts are being made to rewrite the definition of waste and to treat all “recycling” as “non-waste” or “secondary raw material”. In other words, the fight is still on. Meanwhile the bigger danger grows that developing countries instead of importing toxic waste, allow the world’s most polluting industries to be set up within their borders. “This too is yet another form of toxic colonialism, a new means of profiting while being poisoned.”²⁵

2. b. *The Problem with Plastics*

Hazardous waste is not only imported from outside. It is produced inside the country as well. A clear example is the spreading of *plastics*. They are very convenient, light in weight, water proof, cheap. So it is very understandable that people have taken to plastics, at least as long as they don’t know about the problem which plastics cause to our health and to the environment. Plastics contain dangerous substances such as PVC (Polyvinyl chloride) which can cause cancer. For example, plastic sachets with dairy milk contain PVC. When burnt, PVC releases vinyl chloride gas which causes liver cancer, and eventually contributes to acid rain through the release of hydrogen fluoride. This can cause the dying of trees.

The problem with plastics is also that they are non-biodegradable, unlike paper and jute. They do not decompose when we throw them away. They remain in the environment for thousands of years. And there these man-made, alien products obstruct the flow of life. They block the circulation of air and the percolation of water in the soil. They get swallowed up by animals, birds and fishes, and eventually they cause their death. The World Watch Institute in Washington estimated that upto 1 mn seabirds and 1 lakh whales and dolphins died because of plastic pollution of the seas in 1987. The Indian Express of 9.12.1997 reports that 55 kg. of plastics were removed from the stomach of a cow. The operation was necessary because the plastics blocked the functioning of the stomach.

Regrettably there is no clean solution to the problem of disposal of plastics. One way or the other they pollute, either the air – if we

burn them – or the soil and the water. Recycling looks an attractive way out. It is a flourishing business in India. The problem is that the process of recycling causes health hazards. During the melting down for remanufacture poisonous dioxin is being released. That burning plastic poses a peril became dramatically visible when Asia's largest plastic scrap market in Jawalapuri ("place of fire") in Delhi went up in flames and toxic smoke engulfed the area. One sq. km. of scrap heaps, mainly PVC, and 2,500 shops kept burning for 12 hours. Thousands of people had to flee and many suffered severe respiratory problems. Asthma patients got strong attacks.²⁶

The same toxic dangers threaten our lungs in a slow process from the little fires of waste-heaps containing throw away plastics all over the place. The only safe solution is to reduce the use of plastics, especially the one-time use-and-throw packaging material and to return to eco-friendly degradable materials. SEWA women and NAPM activists in Trivandrum have shown that consumers and shopkeepers can be persuaded to stem the tide of plastic flood and opt for harmless, biodegradable packing material.

2. c. Pesticides

There is a growing awareness that modern agriculture with its chemical inputs is posing a threat to health and environment. The story of chlorine introduces us to the problem. The danger was discovered in 1774 when the Swedish chemist Scheele let a few drops of hydrochloric acid fall on a piece of manganese dioxide and it dissolved and emitted a greenish yellow gas. Taken from sodium chloride, chlorine gas got used in bleaching textiles and manufacturing paper. Tonnes of it were used as a deadly weapon during World War I. Rachel Carson's "Silent Spring" (1962) documented the devastating effects of chlorine-based pesticides on wildlife.

Meanwhile chlorine has become an important building block to chemical compounds such as biocides, solvents, chlorinated plastic, PVC, etc. One chemist thus comments about its dangers: "God created 91 elements, man a little more than a dozen and the devil one – chlorine."²⁷ It is used in reaction with oil-based methane and ethylene to make organochlorines such as DDT and other chlorinated pesticides such as aldrin, dieldrin, endrin, lindane, chlordane and heptachlor, which

survive for long in the soil and accumulate in fatty tissues and thus pass through the food-chain. In that way high amounts of DDT are found as well in penguins in the Antarctica as in mothers' milk in the Punjab and elsewhere.

In the case of CFCs (which are used in fridges), the problem is not toxicity, but the harmful effect on the upper ozone layer which causes ozone depletion as discussed already. Worldwide there are about 15,000 organochlorine compounds in current use. Campaigns by Greenpeace and others to phase out these compounds are resisted by the chemical industry.²⁸ India has not so far joined the ban on some of the most toxic compounds. Research done by Greenpeace on the chlorine industry in India documents the widespread presence of these toxics in the air and in water, resulting from effluents of paper industries and PVC plastic production.²⁹

Chlorine plays an important role in the production of pesticides. Through the massive use of pesticides chemical poisons have entered into the surface-waters of rivers, ponds, lakes and seas and have even penetrated into aquifers, poisoning the sources of water for drinking and irrigation. The awareness of the threat to health has spread, and steps towards other methods of pest-control are being undertaken with promising results, but short-term profit-oriented economic considerations are retarding a more rapid process of reorientation towards an eco-friendly type of agriculture. As Anil Agarwal has put it, "the elite of our nation have failed to internalise the ecological principle that every poison we put out into environment comes right back to us in our air, water and food. These poisons slowly seep into our bodies and take years to show up as cancer."³⁰ Pesticides are particularly dangerous because they may wreck the human immune system and thus make us vulnerable to a wide range of diseases.³¹

The initial attraction of chemical pesticides – as of chemical drugs – was based on the quick results of reduced losses in pest-affected crops. Or in the case of DDT, it created the hope that it could wipe out malaria. Meanwhile we have learnt about the backlashes. Mosquitoes have become resistant and malaria is making a comeback. And peasants are facing a "pesticides treadmill" which gets going

through the killing of the natural enemies of non-targeted pests leading to “secondary pest outbreaks”, and through the occurrence of “resistance” which then forces one to use new pesticides. This has been happening for a long time. The tragedy is finally making headlines because of cotton-farmers in Andhra Pradesh and elsewhere committing suicide, as they can no longer cope with the rising costs and falling yields. They have been exhausted to death on the treadmill.³²

The effects on the health of those who spray these poisons are seldom discussed. Yet they are very serious. Small cultivators and landless labourers, spraying without protection, are most affected. In Sri Lanka in 1978, 15,504 people were admitted to govt. hospitals with pesticide poisoning, and 1029 of them died.³³

Pesticide residues in food bought on the market threaten the health of its consumers. Washing and boiling do not remove all the poison. Much depends on the last time of spraying before the harvest and on the degrading time of the pesticide used. The problem is that these poisonous residues in the food are not the only ones which enter our bodies, whereas the minimum safety levels are given only for each poison separately.

Making up the cost-benefit balance we find that the producers of pesticides, export-crop producers and large green-revolution farmers are making profits out of this type of dangerous agriculture. Especially the oil – and food – multinational companies have a large stake in the continuation of this pattern of production.³⁴ In order to do so they have come up with pest-resistant seeds which are designed to withstand the spraying of herbicides produced by the same company. So spraying can continue as far as they are concerned.

Successive Indian govts. have so far been reluctant to restrict the use of chemical pesticides. The “dirty dozen” most deadly pesticides which have been banned in many other countries are still used. Seventy percent of the pesticides used on Indian farms are banned or severely restricted in Western countries, and are identified by the WHO as extremely toxic.³⁵

Pesticide use has multiplied 20 times between 1960 and 1980. The level of DDT and BHC residues in food in India is among the

highest in the world according to studies of the FAO. All this is being justified with the argument that this is a necessary price which has to be paid for higher productivity. This argument is no longer valid.

Fortunately, the knowledge is spreading that alternatives are available. Integrated pest management is an approach which at least reduces the over-spraying with chemicals to a considerable extent. Organic farmers and scientists have developed biological methods of pest control.³⁶

3. Cot-Deaths and Ghost-Riders

So far we have discussed a few examples of chemical processes and toxic substances which affect our health and the environment at large. Many more examples could be given. We are surrounded by the products of the chemical industry. They are in the paints on our walls, in synthetic textiles and furniture, not to forget in the medical drugs which we swallow. We are trapped in the circles of poison. And the problem is that these various substances interact with each other, which leads to unexpected consequences. The health authorities may set danger limits for separate substances. We are informed – sometimes – what are the limits with which our bodies can cope. How much of DDT, how much of cadmium or arsenic we can survive without too much of danger. But we are not told what may happen when the small “safe” amounts of various chemical substances in our body together form a highly toxic, damaging brew which can have lethal effects. Small babies are exposed to poison even before birth through the placenta, and after birth through the mother’s milk. Add the fumes they are breathing in and their fragile, vulnerable system may collapse. At least that is one explanation for the puzzling phenomenon of the increase of cot-deaths of seemingly healthy babies who suddenly die, without symptoms of fever, infection or the like.

Or take the phenomenon called ‘ghost-riding’ – where people have driven up on the wrong side of the road without realising it, causing serious traffic accidents on highways. Who knows what may be the cause of such ‘black-outs’? They could be due to the interaction of various more or less innocent chemical factors, such as medicines, residues in the food, smoke in the air, chemical elements in the car.

Only time and further research will tell for sure, but it is highly probable that such new developments are connected with the impact of a rapidly increasing range of chemical products. Neither the scientists, the producers, nor the consumers know what all these, once released, may cause. This risk-factor will be discussed later. It is an indication that we will have to go beyond looking at single factors – let us say DDT or plastics or plutonium – and try to understand the total process and its largely unknown implications and consequences. That will lead to the question whether the overall present direction of so-called development is viable or bound to lead to disaster, and, if so, whether there are alternatives which can guide us into a less risky and more sane future.

B. SPEEDING UP THE SPENDING OF PRECIOUS RESOURCES

Pollution is one basic element of the eco-crisis. Exhausting resources poses another threat to human survival. The Club of Rome had this in mind when it launched its warning years ago under the title “Limits of Growth”. The World Watch Institute in Washington and a growing number of other watchdogs point out that certain resources are rapidly being exhausted. This applies to non-renewable resources of energy such as coal and oil, and to various raw materials which consist of limited reserves. However large these stocks may still be, the rapid spread of exploitation eats away at them and leaves the coming generations with the prospect of dwindling resources.³⁷ In the case of renewable resources like biomass, we face the limits of available land and water.

1. Energy Crisis

For thousands of years human civilisation has been based on the utilisation of solar energy. The development of civilisation became possible through the “neolithic revolution” which created conditions for producing a surplus from agriculture. Though technical improvements were introduced, agricultural society basically remained dependent on capturing solar energy and getting it transformed into biotic energy provided by plants and animals.

The industrial revolution of the 18th century brought a radical shift away from renewable and almost inexhaustible solar energy to the use of non-renewable fossil fuels as basic sources of energy.³⁸ Coal, oil and gas which have been formed and accumulated in the earth in a process of millions of years provide the highly productive energy-input for the mechanisation of industrial production and transport on a global scale, and for the transformation of all spheres of life. Unlike the "neolithic revolution" which took thousands of years, this "industrial-fossil" revolution happened in a few decades, as early capitalism pushed it. It created the illusion that now humans had unlimited resources of energy under their control and at their disposal. The insight that these resources are limited and cannot be renewed is part of the growing awareness that we are facing a basic eco-crisis. However many new finds of oil and gas fields may be made, however much the efficiency in the use of these fossil fuels can be improved, and however much humankind can delay the process, the time is coming closer when these resources will run out. It was hoped that nuclear energy could take over and provide the energy for further industrialisation. But the insight is spreading that the risks are too high and that the problem of nuclear waste disposal is unsolvable, as will be discussed in Ch. III. This has far-reaching consequences. It implies that the industrial society as it has evolved during the last 200 years or so, is coming to an end. It cannot be sustained in its present form. New technologies based on solar energy, wind power, etc., may be able to take over in some areas, but many existing forms of economic and social organisation are only feasible with fossil fuels. Skyscrapers, mass transport by jet planes and cars, energy-intensive production (as in cement and aluminium factories) will become unsustainable. This is one of the basic reasons for the search for an alternative development model.³⁹

2. Deforestation

The National Forest Policy of 1952 has set a national target of bringing at least one third of India's land area under forest cover. This target has not been achieved. Instead, deforestation has taken place and is still taking place. The Forest department statistics claim about 23% of the country's total area as forest lands. That makes this

department a very powerful branch of the administration indeed. But it does not mean that all forest lands are covered by trees. According to the National Committee on Environmental Planning, not more than about 12% of the total land surface is under adequate tree cover. Aerial surveys have shown that many reserve forests have no trees at all.⁴⁰ Statistics differ. A 1995 report puts the total forest cover at 19% of the total land area.⁴¹ Earlier estimates spoke of 1 mn hectares of forest being cut every year, and 0.15 mn hectares of forests lost to development projects annually. Over the last 80 years India is said to have lost nearly 2.5 mn hectares of mangrove forests.

The main pressures on forests are cutting for commercial purposes, providing raw material to industries (e.g. paper industry), and clearing for cultivation and development projects. Different interests are clashing, according to the different functions that forests perform. Gadgil and Guha list the following:⁴²

- a. Maintenance of soil and water regimes.
- b. Conservation of biological and genetic diversity. These are two crucial ecological functions which can hardly be calculated in money terms.
- c. Production of biomass for subsistence, e.g. fuel, fodder, building materials, etc.
- d. Production of non-timber biomass for sale, such as cane, sal seeds, tender leaves.

For their livelihood, local communities are very much dependent on these four functions of forests.

- e. Production of woody biomass for commercial purpose, i.e. as raw material for industry.

This last function is what logging companies and timber merchants are interested in. The interests of the timber merchants and their customers clash with the interests of the Adivasis who live in the forests and with the forests, and depend on them, economically as well as spiritually. They also clash with the interests of all of us, even of humankind at large, who need the forests for the sake of fresh air, stabilisation of climate, supply of water, prevention of soil erosion, droughts and floods, and the preservation of biodiversity. Forests help maintain the oxygen levels of the air which is a basic precondition of

life; they absorb the CO₂ emissions and thus help to keep the climatic balance; and they regulate the supply of water through the seasons by preventing excessive run-off of rain water and allowing it to percolate. Once the forest is cut and the hill slopes are denuded, rains will rush down, eroding the soil and causing floods in the plains.⁴³

It should be the task of the govt. to set priorities and decide how the different interests can be taken into consideration in such a way that the forests will continue their crucial functions. Logically, we would expect that the authorities would give priority to the common interests (a + b) and the interests of the forest people (c + d), and would regulate the commercial exploitation for industrial purposes (e) in such a way that they don't destroy the forests.

Unfortunately, following the practices and legislation introduced by the colonial govt., the Indian govt.'s forest policy tends to restrict the Adivasis and deprive them of access in the name of protection of the forests. Instead, it is assumed that wildlife parks on the one hand and mono-crop plantations on the other can safeguard the ecological functions of the forests while at the same time increasing govt. revenues and profits.⁴⁴

3. Diminishing Biodiversity

Biodiversity is essential for survival. In the bible, Noah had to take representatives of all species into the ark in order to make life after the flood possible. The loss of species which is increasing day by day is one of the greatest dangers facing humankind. Scientists distinguish "genetic diversity", "species diversity" and "eco-system diversity".⁴⁵

"Genetic diversity" means the variation within a particular species, e.g. the estimated 120,000 types of rice plants in the world of which Indian farmers might have cultivated 30,000 in the past, whereas at present due to the "green revolution" approach only 50 varieties are being cultivated.⁴⁶ This diversity is the basis for countering pest attacks and adjusting to climatic conditions. "Species diversity" indicates the variety of plants, animals and other life-forms within a particular region. It provides the basis for a variety of uses, for food, medicines, construction, etc. "Eco-system diversity" means the variety of habitat within an area, e.g. grassland, marsh and woodland.

Species have been disappearing earlier. But what happens at present, due to human interventions on a large scale and with increasing speed, is unprecedented. It is estimated that between 1975 and 2015 upto 11% of the world's species may become extinct. Much attention is given to endangered species such as tigers and whales. Not less important is the disappearance of small birds and insects which play a crucial role in the pollination of plants. More than 80% of the flowering plant species depend on insects and birds for producing seeds and bearing fruit. Many pollinator species are rapidly declining in recent years.⁴⁷ The increasing extinction of species happens for various reasons: pollution; loss of fragmentation of habitats; over-exploitation; and introduction of exotic, alien species into other habitats.

The loss of habitat happens very massively in the process of deforestation, mining, industrialisation and urbanisation. Fragmentation occurs through the construction of roads, railway lines, harbours, etc. The introduction of alien species into other habitats, which has increased due to economic globalisation, often has unexpected consequences. A particular type of voracious fish which was released into African lakes has multiplied at the cost of many other fish species which became extinct. Such experiences are one of the reasons for ecologists to warn against the release of genetically modified organisms, as we cannot predict what effects they will have in various habitats.

The tropical rain forests which cover about 7% of the earth are particularly rich in plant and animal species. They are the habitat for upto 50% of all species. The ongoing destruction of these forests is therefore a direct attack on a very rich and valuable heritage. Similarly marine eco-systems are under threat.

Industrialised agriculture is the main cause for the diminishing diversity of farmlands. The promotion of big mono-crops for export is destroying the peasant culture of local communities which is based on the utilisation of nature in its diversity. Traditional agriculture controlled the problem of pests through crop rotation and the use of different crops in different seasons. The people did not use pesticides and they did not recognise the concept of "weeds", as they knew how to utilise everything for different purposes.⁴⁸ According to the dominant paradigm of development today, diversity goes against

productivity. So uniform crops are introduced, using the building blocks of nature in its diversity and then destroying that foundation. It is like taking stones from a building's foundation to repair the roof. However, mono-cultures are not ecologically sustainable and expose agriculture to the danger of devastating pests, which then require more harmful pesticides. The problem of artificial homogenisation is also found in industrialised livestock farming. Traditional varieties (e.g. of cows) are giving way to cross breeds which are more vulnerable to diseases and which are reduced to the function of milk production.

The latest threat comes from the launching of genetically manipulated organisms (GMOs), as the green revolution and the white revolution are followed by the genetic engineering revolution. The ecological risks implied in this revolution are great as nobody knows what the impact on the environment will be. This revolution may rather be called counter-evolution, for it goes against the ways in which nature organically evolves, and against the ways in which the peasant cultures based their work on knowledgeable respect for the interconnected patterns and processes of nature. This counter-evolution is basically driven by the economic calculations of the big multinational seed, food and oil companies and the genetic-technological researchers. They push for the patenting of seeds and life-forms. In that way they try to establish centralised control over the production process in order to maximise profit. If this is not prevented, peasants will lose their control over seeds and the cultivation process. Vandana Shiva has called this the "Enclosure of the Commons".⁴⁹

Fortunately, thanks to the organised work of such campaigners as Vandana Shiva, Vanaja Ramprasad, Brewster Kneen and many others, the awareness has been growing that this process will reduce biodiversity in a disastrous way. The Conference of Parties to the Convention on Biological Diversity agreed in Nov. 1995 about the need for a legal Biosafety Protocol. The same conference also discussed the question of Intellectual Property Rights.⁵⁰

4. Loss of Land

Humankind, growing in number, depends on land and water for food and other needs. Land and water resources are limited and

declining. Competition over the use of land and water resources is increasing, locally as well as globally. The powerless lose more and more the little access to resources which they had, and those who grab the land are oriented towards short-term profit-making, and not long-term preservation to provide food security. It is necessary to understand the causes of this process in order to identify possible strategies to counter the trend.

4. a. Erosion/Depletion

Erosion of the soil undermines the capacity of the earth to increase the production of food and other biomass. Fertile topsoil which is formed over centuries is going down the drain. The world's farmers are losing an estimated 25 bn tonnes of topsoil from their croplands per year, which amounts to a loss of at least 9 mn tonnes of foodgrains.⁵¹ In India 50-60% of the cultivated land suffers from serious soil degradation.⁵² In financial terms the losses from erosion go upto 7% of the value of the agricultural output according to a recent estimate in a study of FAO/UNDP/UNEP.⁵³

A part of these losses is due to natural causes such as heavy rains, steep slopes, acidic soils, and strong winds in dry areas. But human activities are contributing more and more. To mention some of the main factors from a longer list: deforestation followed by floods; water logging and soil salinity due to inappropriate irrigation projects; and industrialised, large-scale farming, which exposes the soil to machines, winds and chemical fertilisers and deprives it from more organic, natural and social protection.

4. b. Alienation

Land and water are first of all needed for food production. For a long time, recognising this, the govt. did not permit the utilisation of agricultural lands for other purposes. Today we see how this sensible policy is being eroded. According to one estimate Asia lost 10% of its cropland to urbanisation.⁵⁴ Industrialisation exercises tremendous pressure, not only by the land it occupies, but also by the utilisation of cropland to grow products for industrial use, such as tree plantations. Eucalyptus trees are grown where peasants used to cultivate ragi

and other millets. Take the paper industry, which worldwide uses an area the size of Sweden for the growth of trees. As the demand for paper doubles every 20 years, the area needed for this purpose also doubles.

Even fisheries are turning from the sea to the land. Fertile paddy lands are turned into aqua-culture farms which leave the land unusable within a few years' time.⁵⁵ Even the feed for the shrimps does not come from the ocean, but from grains which have to be grown on land again. Meanwhile biomass is being discovered as a source of energy, such as sugarcane waste. The question arises: Are there enough farmlands for these depleting forests, oil wells and fisheries?⁵⁶

4. c. Globalisation

Much farmland now caters to the unlimited wants of the rich, for whom globalisation means that the whole globe should be available for the fulfilment of their desires.

On the one hand, lands where food crops were grown earlier are used for export crops for the global market: following the tea and coffee plantations of colonial times till today, we now also export – per plane – flowers, fruits, shrimps and the like. The land and water resources used for these products cannot be used for food production any more. This undermines food security, as export markets and earnings can collapse.

On the other hand, lands are used for the rich to come and enjoy golf courses and other tourist attractions.⁵⁷ *The Hindu* of 1.7.1998 reports: "Angry farmers attack golf courses in Indonesia". As this tiger economy is in shambles, hungry people re-discover that they need land to survive and that golf courses are of no use for them. They carved slogans such as "People's lands" into the grass. On another course they planted corn and beans. Years ago, Om Prakash Chautala promoted a Disneyland project in Haryana which would displace 11,000 families and deprive them of their livelihood.⁵⁸

Of course, the ideologues of the WTO will say, earn export dollars in this way and you can import cheap grains from the USA or Australia. But all this is ecologically not sustainable.

4. d. Ecological Reorientation

The question is how the decline of land and water resources can be stopped and reversed, so that enough healthy food – first of all – can be produced. If agriculture has to meet the increasing demands, means have to be found to counter erosion and alienation. Experiences in the wasteland development programme indicate that this will be possible only if local people get (back) control over local resources and have a stake in the increase of biomass production, while using organic farming methods to increase soil fertility and augment water supply – for all – through watershed management. This will be discussed later.

5. Pollution and Depletion of Waters

Life depends on water. We need it for domestic use, agriculture, fishing and industry. Water covers 70% of the surface of the earth. Yet we cannot take its availability for granted. Only a small fraction of this water wealth is made available through nature's solar-powered water cycle. It amounts to about 7,400 cubic meters per person per year, which is much more than a person needs.⁵⁹ But this calculation presupposes that water is not wasted, not polluted, and fairly distributed. And that is not the case.

In the past, drought-prone areas knew how scarce and precious water is. But now we are approaching a situation in which water is becoming scarce in other areas as well. "Water tables are falling, lakes are shrinking, and wetlands are disappearing."⁶⁰ Future wars may be fought over the control of water resources. In India we know how intractable the conflicts over water-sharing are, for example in the case of the Cauvery.

Traditional conflicts are aggravated by a number of pressures. Growing populations need more water for drinking and domestic purposes. Agriculture and industry compete for water. And all users contribute to the pollution of water resources: sewage waters carrying human and industrial waste flow into the rivers and seas. Rivers and even aquifers get poisoned by pesticides and other poisonous matters. Reports from different parts of the world tell of lakes and rivers in which all life has died. There is a growing concern about the poisoning of the seas and oceans through the waste which is dumped into them.

Other pressures come from destructive technologies which upset the eco-balance. In the case of fisheries, this leads to declining fish resources. We face climatic changes causing droughts and storms and floods which turn water into a destructive force. Basically we are facing the problems of management of water resources, of just distribution, and of eco-friendly technologies. This becomes clear when we look at the causes of scarcity.

5. a. Depletion

Growing populations mean growing demand for water. Growing cities are now bringing water from far-away sources. What is diverted to the cities is no more available for agriculture and rural communities. Often such schemes interfere with ancient eco-systems and the livelihood of local communities depending on them. That is the case with the proposal to turn the brackish Pulicat Lake near Chennai into a freshwater one in order to supply water to the city. Ecologists protested as the closing off from the sea would "lead to the total destruction of the natural eco-system, its resources and the lives of the indigenous people dependent on it". About 30,000 fisherfolk would be directly affected and many others indirectly.⁶¹ To quench the thirst of city dwellers and satisfy the demands of urban industries have become all the more difficult because cities have been destroying their own water-supply sources by ruthlessly filling more and more water tanks and turning them into land for housing colonies and industries, as can be seen in Bangalore, Hyderabad, Chennai and Madurai. These are clear examples of mismanagement of water resources.⁶²

Another form of mismanagement is the waste of precious water. One of the most striking examples is the use of flush-toilets in rich countries and in the houses of the rich. 15-20 litres of water are flushed every time one uses the toilet. This waste of huge amounts of water has even become a criterion of civilisation and development. Only slowly the insight is dawning that humankind cannot afford this wasteful "solution" to the problem of the disposal of waste in the long-run.⁶³ It contributes far too much to depletion as well as pollution of limited water resources. In industry there is a habit of wasting water, as the

use of water is not monitored like other precious inputs. It has been shown that many industries could very much reduce the amount of water they utilise, and could recycle the water used for cooling.⁶⁴

One of the reasons for the depletion of resources in agriculture is linked to modernisation and especially the introduction of borewells. Of course, this is a boon, as long as care is being taken that the source of groundwater is not over-utilised. The problem is that farmers have been encouraged to grow profitable crops like sugarcane, which require much water, in areas where the annual rainfall cannot sustain such crops in the long-run. Nature's feedback in the form of sinking water-tables and drying up wells comes after a while and then people find it difficult to return to the ecological wisdom of earlier practices.

The problem of competition between states, rural and urban communities and private well-owners shows that there is a lack of collective decision-making and control at all levels. This is bound to lead to more problems.

5. b. Pollution

Water is used for the disposal of waste and it gets polluted by the poisonous chemicals which abound in agriculture, industry and daily life use. Nature has the capacity to restore water so that it can continue to sustain life.⁶⁵ But for that pollution has to be kept within limits. The problem is that modern industrial society tends to go beyond limits. It is estimated that 70% of all available water in India is polluted. Several rivers and lakes are reaching the crisis point. This is the cause of many water-borne diseases. It happens not only through the consumption of polluted water, but also through the consumption of poisoned fish. Minamata, a fishing town in Japan, has become a worldwide name for the danger of such poisoning. Hundreds of people became the victims of the Minamata disease – with symptoms of madness and paralysis – due to mercury poisoning through the consumption of fish. Chemical plants, paper mills, dye factories, rayon factories with their effluents all contribute to the rapid deterioration of the available water resources. Another major source of pollution is modern agriculture with its chemical fertilisers and pesticides. Surface water as well as ground water is being affected.

The people who are most affected by the pollution of lakes, rivers and seas are the fisherfolk.⁶⁶ Worldwide about 200 mn people, mainly from developing countries, depend on healthy aquatic eco-systems for their livelihoods. The declining health of the waters leads to declining fish stocks. This happens all over the world. The situation is aggravated by the introduction of destructive fishing technologies such as purse-seining and high-tech deep-sea fishing which lead to over-fishing and depletion of the seas. The latest, equally problematic, response to the crisis in fisheries is intensive aqua-culture and genetic engineering. This model aims at the “monocropping of high-value species to supply international markets”. This is bound to be at the cost of the environment and the traditional artisanal fishing communities. Ecologists and people’s movements warn that this has further predictable and unforeseen, risky and damaging consequences.⁶⁷

5. c. Unjust Distribution

Oceans, clouds, lakes and rivers are obviously meant to be shared commonly. The privatisation of water resources is highly problematic. It leads to injustices. Why should poor women walk long distances in the city for one pot of drinking water while rich car-owners may have a 24-hour supply and use water to have their cars washed and lawns sprayed? On which ground should rich farmers have the right to go deeper and deeper with their borewells while the wells of the poor fall dry?

These new injustices are added to the age-old caste-based injustices which deny access to clean water to Dalits. This is a further indication that the struggles for social justice and for eco-justice have to go together.

C. TAKING KNOWN AND UNKNOWN RISKS

Scholars have started to characterise our modern society as a “risk society”. The word is not strong enough to express what is happening. It tries to appeal to our courage to be ready to take risks (which are a part of life) and not to demand security. The problem is that it is not us who decide which risks to take, but anonymous powers which push us into deadly dangerous situations whether we like it or not. Financial markets may suddenly collapse and people lose their

jobs or livelihood. We have no choice but to breathe when we plunge into the city traffic, whether it will cause cancer or not. We don't know what poisons we bring home from the vegetable and fruit market. We don't know which winds will bring us deadly gases from the site of an industrial accident, and so on.

New technologies have been introduced and are being introduced, and it is only later that we discover side-effects and problems which were not anticipated. This process of innovation poses a particular threat to the environment, as we cannot call back what has been released into the environment. We are now seeing the deadly dangers of discoveries which earlier had been welcomed as solutions to our problems. DDT would put an end to malaria. Now DDT is being banned in most places and malaria is on the increase, carried by resistant mosquitoes. Nuclear energy would solve the energy problem, but now we learn that nobody has a safe solution for the disposal of nuclear waste. Genetic engineering is the latest hope: it presents itself as a solution to the food problem. What we will discover once the process is under way, we don't know.

A German astrophysicist, Peter Kafka, has characterised the basic problem as a "crisis of acceleration". His argument is based on the evolutionary principle of development through trial and error. In the process of evolution innumerable possibilities have been tried out and most were rejected as non-viable. The problem is that human beings with their modern science and technology, driven on by their market economies, have accelerated the trial and error process in an irresponsible way. Earlier societies took generations to test the viability of innovations, thus protecting themselves and the environment against avoidable risks. But at present things are changing at a tremendous speed, and no sufficient time is taken to find out which unacceptable risks are involved. Again and again we hear of drugs and other products which, after having been introduced, turn out to be harmful and have to be banned.

This involves a legal question. Ecologists argue on the basis of the "precautionary principle" that protective action has to be taken without waiting for scientific proof, as delay may cause irreparable harm. Big business argues against this principle, saying that companies are free

to produce till it has been proved that an activity or product is harmful. In other words, people have to be poisoned before preventive action can be taken.⁶⁸

Peter Kafka goes beyond legal questions – which are important for intervention – by saying that we need to return to the evolutionary principle which is based on a rich diversity of possibilities and a slow pace of trying them out over a long period of at least a generation. Only in that way of cautiousness can we reduce the risks of Chernobyl and Bhopal, the mad cow disease and a variety of civilisational diseases.

1. Nuclear Radiation

The splitting of uranium or plutonium atoms produces radioactive fragments and activation products which cause the ionisation of normal atoms. This radiation leads to deformations and cancer.⁶⁹ In nuclear reactors, most fission fragments are trapped in the fuel rods in which the fissioning takes place, but activation products can be formed in the surrounding air, water, pipes and building, thus posing a threat to workers and life in the vicinity.

A big, unsolved problem is the disposal of radioactive waste. The “spent” fuel rods contain a concentration of radioactivity which is many hundreds of thousands of times the concentration in granite. After taking out the plutonium – for reuse or for atomic weapons – the remaining high level radioactive waste has to be safely disposed of and kept secure for hundreds of thousands of years, because the half-life of these elements is so long. There are no reliable solutions for protection over such a long time. This poses a massive threat to the generations to come. Even the dismantling of the nuclear plants, after 25 or 30 years, causes tremendous problems as all of its debris are contaminated.⁷⁰

How immense the risks are which nuclear reactors pose for environment, health and life became very clear when a nuclear reactor in Chernobyl melted down and released radiation far beyond the borders of the Ukraine. There has been a massive increase in thyroid cancers in Ukraine, Belarus and Russia. The soil and its food products are contaminated and this causes leukemia and other blood diseases

and the break-down of immune systems.⁷¹ Till today, and for many years to come, people are suffering from the fall-out. The problem of disposal is untractable. After the accident in April 1986 a massive sarcophagus, a sort of cement tomb, was constructed over the radiating ruin. This construction is already cracking up and immense investments are needed just to keep the lid on the radioactive debris. The Ukrainian govt. has applied for billions of dollars to solve the problem.⁷²

Of course, officials of the atomic energy establishment in India will assure us that nothing of the sort can happen here. Confidence in such assurances is undermined by reports of accidents and problems in our nuclear reactors. The Atomic Energy Regulatory Board has come out with a report which lists more than 130 urgent safety issues.⁷³ Unfortunately the Official Secrets Act prevents full information from reaching the public which will eventually be affected.

The overall picture of unsolvable problems, especially with regard to the disposal of nuclear waste and the safe dismantling of nuclear reactors, indicates that the scientists and politicians were far too much in a hurry when introducing this technology before having technical solutions for its end-phase of waste disposal. The birth-defect of the nuclear age is rooted in the original military purpose of nuclear energy research. The "peaceful" use of nuclear energy was an afterthought, designed to get the support of the tax-paying public for huge nuclear programmes. By now several countries have stopped expanding their nuclear energy production and some are trying to phase it out altogether, having discovered through trial that it was a too risky and too costly error.

The risks of radioactive contamination have spread far and wide. Suspicions grow that nuclear tests as well as low-level radiation in the vicinity of nuclear reactors are the main causes.⁷⁴ Nevertheless, new risks are being taken, mainly with economic considerations in mind. We are now "Entering the Era of Radioactive Consumerism" as the Ecologist Asia puts it.⁷⁵ European law-makers allow, since 1996, the recycling of nuclear waste into consumer goods. Earlier strict rules have been relaxed 250 times. Low-level radioactivity, which is not less dangerous, may now enter into people's lives through cutlery and the like.

2. Genetic Manipulation

New products are coming on the market, the results of what is called genetic engineering, or biotechnology. Eco-movements and concerned scientists have called for a moratorium (temporary stop) on the release of such products outside the research labs until it has been made sure that they don't carry hazardous risks for environment and health.⁷⁶ As this appeal has not been heeded by companies in a hurry for profits and by govts. under the pressure of industrial lobbies, the concerned critics have demanded the labelling of such products as being genetically modified, so that their effects can be monitored and consumers may have a choice. This is being resisted by the industries while the political response varies. Meanwhile media campaigns are under way to create enthusiasm for the wonders of biotechnology, which are supposed to solve the world's food and health problems.

One argument used to overcome fears of the unknown effects of biotech is that humans over the centuries have been crossing plants and cross-breeding animals. The new molecular techniques of biotechnology, it is suggested, are nothing but a continuation of the accepted practices of plant and animal-breeders. This is misleading on two accounts. Firstly, the new techniques are based on the manipulation of genetic material, of DNA, to create modified organisms which would never evolve in natural cross-breeding processes. Secondly, in contrast with the centuries of earlier crossing processes, these products are being tested for a few years and then released. No time is taken to observe side-effects over a longer period.

Critical scientists point out that the very terminology of biotechnology and genetic "engineering" suggests that the processes are fully determined and under control – as in mechanical engineering. But this is a reductionist approach, says Vandana Shiva, which ignores that life-forms are much more complex and characterised by indeterminacy and uncertainty.⁷⁷ Genes are not simply like nuts and bolts. They are part of a complex organism. The researcher may isolate and transfer a particular gene for its colour or drought resistance, or herbicide quality, but it may bring about other modifications as well. In the case of the least complex organisms such as bacteria, this sort

of “engineering” may have more or less predictable effects. But in more complex organisms the combinations of genes and their multiple effects have to be taken in consideration. Scientific research in laboratories cannot predict all the possible mutations and effects of the transfer of genes. And therefore we don’t know the ecological risks. Once we know them, maybe after 10 or 20 years, the damage may be beyond repair. Somebody for example raised this question about the bacteria which are released into the ocean to fight an oil spill: what do they do after finishing that job? Faulty cars or dangerous drugs can be withdrawn from the market, but dangerous genes, once released into the environment, cannot be recalled.

Ecologists are particularly concerned about the danger of reducing natural biodiversity through the introduction of powerful transgenic organisms, the spread of new resistant weeds, and the possible emergence of new viral strains. The risks are unpredictable: “The uncertainty and impossibility of predicting exactly what will happen as a result of intended – and unintended – gene transfer is a key feature of genetic engineering.”⁷⁸ It is interesting to see how even articles designed to take away fears are indirectly admitting that there are no guarantees. “Genetically-manipulated bacteria are *unlikely* to proliferate out of control.”⁷⁹

It is obvious from where the pressure comes to move from scientific research in labs to production of genetically manipulated organisms (GMO) in fields and to sale in the market. Multinational companies like Monsanto are pressing. Their power is much stronger than it was in the case of nuclear technology which initially was fully under state control. Biotechnological research is from the outset in private hands, while receiving govt. support, and it is pursued for commercial purposes. The giant food and pharmaceutical companies see here opportunities for an expanded control of markets and accordingly, huge profits.

Along with ecological hazards people are threatened economically. Subsistence peasants and organic farmers who have so far survived the green revolution are now threatened in the context of globalisation. The debate on the “Terminator” seeds shows what is in store. These have been jointly developed by the US Dept. of Agriculture (USDA)

and a cotton-seed company which is a subsidiary of Monsanto.⁸⁰ They have acquired the patent for the "Control of Plant Gene Expression", extending to plants and seeds of all species. This technology sterilises the seeds of the plants which are grown. It programmes a plant's DNA to kill its own embryos. This forces farmers to buy seeds each year anew. Instead of the multiplication of seeds in the field of the farmer there will be a multiplication of profits in the accounts of Monsanto or other companies which may buy up Monsanto. And what if the terminator function escapes and moves into surrounding open-pollinated crops or wild, related plants? Molecular biologists are examining the risk of sterility spreading and resulting in a global catastrophe.

All this would create total dependency on the big companies and would be a mortal blow to the peasantry. Even Dr. Swaminathan who so much tries to integrate peasants more fully into the market economy has warned against this. Farmers who produce export crops are also threatened by biotech offensives, which partly aim at creating GM substitutes for traditional Third World crops. A further threat is "High-Tech Piracy" which takes genetic material from southern countries and then patents it. The "biopirates" are not only interested in microbes and plants but also in the bodies of indigenous peoples.⁸¹

Broad alliances will be needed along with govt. action to counter the dangers and contain the risks. Basically however, it is not only an ecological, economic and political question, but a philosophical, cultural and religious one. How do we see our relationship to life in its rich diversity as it is given to us and on which we depend? Is it something which we can manipulate and terminate at will, in the pursuit of profits? Or are we meant to live with it in a more supportive and co-operative way?

A broad religious coalition representing 80 religious faiths and denominations in the US, including leaders of Protestant, Catholic, Jewish, Muslim, Hindu and Buddhist faiths, has come out against the patenting of life, which WTO and business are pursuing. They declare: "We... oppose the patenting of human and animal life-forms... We believe that humans and animals are creations of God, not humans, and as such should not be patented as human inventions."⁸² As a

bishop explains: "The patenting of life-forms reduces life to its marketability. Gone is the fundamental principle that life is a gift that ought to be shared and nurtured."

3. *Psychic Numbing*

Human beings have been equipped to cope with dangers, such as enemy attacks, floods, epidemics and so on. But our senses and security systems are inadequate to respond to the new dangers which threaten us. We neither smell nor taste radioactivity. We can't imagine the destruction which a nuclear war will bring. Or take the new ecological dangers. The effects of deforestation can be noticed, but the destruction of the ozone layer remains invisible and its effects will hit us only later. Our senses may warn us in the cases of smog in the city or dying fish in the river. But how do we wake up to the nuclear danger? Many problems are exploding now but will hit us only in the future. Computer simulations may tell us what is in store. Our analytical mind may register this, but our instincts react only slowly and our soul may not be alert.

The US psychologist Robert Jay Lifton⁸³ studies the problem of our psychic reactions to the gigantic threats which we cannot imagine. He speaks of "psychic numbing". This is the capacity to "kill our feelings" in order to survive or carry on while surrounded by the dangers of death. It is the capacity to become indifferent to the warning information.

This can be found in the cynicism of the powerful as well as in the fundamentalism of the powerless. It may most effectively be promoted through consumerism as the opiate which numbs. It can also lead to fascination with violence which may be the biggest social-psychological problem we are facing today.⁸⁴ It can be found in its most extreme form in the love of the Bomb and in the popularity of horror films. This "violence is an expression of profound despair, because it seems as if the world is turning back to chaos".⁸⁵ To counter this we need to foster the psychic capacity to face the truth, to be strengthened and comforted through solidarity, and to endure in life-sustaining action.

It will not be enough to spread information and analysis. We need to be sensitised on a deeper level of compassionate consciousness

and commitment. Arundhati Roy appeals to that in her piece after the nuclear tests. It ends with the words: "If you are religious, then remember that this bomb is man's challenge to God. It's worded quite simply: *We have the power to destroy everything that You have created.* If you're not (religious), then look at it this way. This world of ours is four thousand six hundred million years old. It could end in an afternoon."⁸⁶

D. THE NEED FOR BASIC REORIENTATION

We have surveyed different aspects of the eco-crisis: pollution, dwindling resources and incalculable risks. All over the world people have got into action, trying to prevent further damage. They focus on different problems: pesticides, global warming, nuclear plants, soil erosion, deforestation, genetically manipulated food and so on. At the same time the awareness is growing that all are up against the same thing, the same powerful force which causes these problems. It is the dominant development model that guides economic policies around the world. It demands economic growth, industrialisation, modernisation and global division of labour, all that regulated by the logic of capital accumulation. The socialist countries tried to develop an alternative in certain aspects, but they had also adopted a policy of rapid economic growth through industrialisation, albeit under state control. In view of the catastrophic floods taking many human lives and wiping out tens of millions of hectares of crops in China, the Chinese govt. has openly admitted that this has happened because of the large-scale cutting of forests.

It is obvious that a policy of rapid industrial growth, including the industrialisation of agriculture, implies the rapid increase of energy consumption which for long has been considered as a criterion of economic progress. But it is the increase of energy consumption which accounts for a whole host of eco-problems. The burning of fossil fuels leads to pollution of the air and global warming, whereas hydro-electric dams cause deforestation and loss of biodiversity, and nuclear plants threaten us with radiation. This accumulation of problems points to the basic need to reduce the speed of development and the use of energy. Speed has become a destructive deity. We need to re-discover the life-enhancing advantages of going slow.

Speed is not only the enemy of life-sustaining eco-systems but it is also an enemy of the poor. Handloom-weavers, potters, bullock carts, artisanal fishers and small peasants cannot compete in the market with textile machines, plastic products, lorries, high-tech fishing and mechanised agriculture. They lose their livelihood and their huts are eventually demolished when roads are broadened or airports expanded, to occupy ever more space for the minority of those who are in the fast lane of money-making with their cars and planes.

Social-democratic policies have tried to tame the beast of speed which is whipped on by the logic of accumulation of capital,⁸⁷ by sometimes giving some space and protection to groups threatened in the rat-race. With such attempts they responded to the pressures of people's movements. Liberalisation policies are undermining this, and most social democrats have surrendered to the logic of unhampered competition in the market.

But free-wheeling global capitalism is unable to solve the problems of ecology, mass poverty and social disintegration. It is the main cause for the aggravation of these problems. It is, therefore, crucial that those who are taking up issues of eco-crisis, injustice and social disruption find ways to co-operate, to expose the destructive logic of the dominant development model and to support the search for a viable alternative, both theoretically and practically. In later chapters we will see how people are moving in that direction.

CHAPTER II

VARIOUS RESPONSES TO THE ECO-CRISIS

A. DIFFERENT PERCEPTIONS

The eco-crisis ultimately affects everybody. But all are not equally aware of it and concerned about it. Much depends on the social context of a person or group. Rural women who have to fetch water and firewood are more likely to be aware of ecological problems than industrial workers, office clerks, or brokers in the stock-market. Their daily life is affected by it and that makes a huge difference. Let us look at some of the social differences which contribute to differences in perception.

1. Rural Poor, Urban Poor, Omnivores

Madhav Gadgil and Ramachandra Guha subdivide the Indian population in relation to the environment in three categories:¹

a. "Eco-system people", that is the bulk of the rural poor who depend on local resources for most of their material needs.

b. "Ecological refugees", that is people who have been displaced by modern development, live on the margins of urban society and are most exposed to health hazards caused by pollution.

c. "Omnivores" (= all eaters), that is the 15-20% of well-to-do upper and middle-class consumers who have access to the fruits of the earth and the products of industry.

This subdivision does not cover all people. We can add the urban poor who have not been displaced themselves.

Obviously, these social differences lead to different perceptions and approaches. The environmentalism of the rich may focus on wildlife parks, whereas the environmentalism of the rural poor may aim at the local control of resources, be it forest or land and water.

This sort of distinction is helpful to avoid sweeping statements which declare that all environmentalism is a concern of the rich only and harmful or irrelevant to the poor.

2. Women, Men

The experience of the Chipko Movement and other people's movements which have conducted survival struggles has shown that gender – or rather patriarchy – also makes a difference in terms of eco-awareness. Women have often taken a lead – as it was the case in the Chipko Movement – in articulating eco-concerns. Men were tempted by the prospect of earning cash wages by cutting the forest. But women resisted with the slogan that the benefits of the forest are “soil, water and pure air, the essence of life”.² These men and women belonged to the same community, and yet they were divided and had different perceptions, as the men were more integrated into the cash economy, while the women were primarily catering to the material needs of subsistence outside the cash economy. And the dominant patriarchal way of thinking tends to marginalise and suppress the women's voice, in this as in other matters.

In a more general way it can be said that women in rural subsistence households are more aware and knowledgeable about the real value of water, fodder, fuel, food, seeds and the need of conserving and sustaining the productivity of the earth and its capacity to provide.

Vandana Shiva has pointed out that there is a close connection between women's indigenous knowledge and biodiversity conservation.³ Male-dominated development has gone for progress and increase of production through homogenisation and mono-culture cropping while destroying biodiversity. Women, on the other hand, are involved in a wide range of activities, which require skills and knowledge. They know how to select and prepare seeds, when and how to plant and sow, and how to nurture, harvest and preserve. Similarly they have the traditional knowledge of breeding and feeding farm animals, as well as of the use of biomass for food and fertiliser. As such they have been the “custodians of biodiversity”, in a relational way. They know of it as a “complex relationship web”.⁴

The sexual division of labour which has left the unpaid work of nurturing and caring to women has equipped women to be more alert than men to the dangers of the dominant development model. This is not to deny that men can also develop a critical awareness. But they usually find it more difficult.

3. City Dwellers

City dwellers are increasingly exposed to the hazards of pollution and this may lead to a growing awareness of certain aspects of the eco-crisis. However, they lack the immediate experience of the destruction of forests, the erosion of land resources and the decline of biodiversity. The eco-refugees who come from the rural economy and get precariously settled in the informal sector of the cities may have had a direct experience, but they are absorbed by the compulsions of the daily struggle for survival. The city-born workers have grown up in a monetized economy and have learnt to struggle for an improvement in the quality of life by making monetary demands and by asking monetary compensation for harms and losses. This dependency on the cash nexus compels them to fight for jobs in the most unhealthy conditions and to oppose closures on ecological grounds. Trade-unions even demanded the re-opening of the Union Carbide plant in Bhopal.⁵ However, there is a limit to what money can pay for. Deteriorating environmental and health conditions are placing other concerns on the agenda. The moment comes when monetary compensation no longer suffices to make up for losses and for the decrease in the quality of life, unless people get numbed and accept this as part of life.

4. Scientists, Bureaucrats

There are other walls which prevent people from facing the crisis. Scientists, technologists, teachers, bureaucrats, economists and politicians, who play an important role in shaping public opinion and policies, have been locked up in specialisations and separate departments, which hinder them from seeing how scientific, technological and economic choices are affecting the environment and people's livelihood. Their computer calculations don't indicate such problems. They don't see the connections. Scientists may develop

terminator seeds. Technologists may design “world-class” airports. Teachers may propagate the wonders of modern technology. Bureaucrats, economists and politicians may design schemes and projects to stimulate the economy, irrespective of environmental costs. As long as our common thinking is captive of the dominant development model and its compartmentalisation, this approach will last in spite of the gigantic problems which this model has caused.

One would expect that scientists would have anticipated some of the problems caused by nuclear technology, the use of pesticides and antibiotics and so on. But they seem to be almost as surprised as the general public that things don’t work out as foreseen in the laboratory. This indicates that we need another sort of approach to be able to quickly detect the ecological problems. Fortunately such approaches do exist, though the scientific and political establishments are not yet ready to acknowledge them.

Ecological awareness is growing, scientific and technological alternatives are being developed. It becomes a matter of responsible choice. Those who shape political opinion and policies can no longer say at the next Chernobyl-like catastrophe or when confronted with daily air and water pollution, “We did not know, nobody told us”. They can know. The Centre for Science and Environment (CSE) is right there in Delhi. If the decision-makers don’t know, it is because they have allowed themselves to be numbed in the comfort of their air-conditioned offices and cars. The task before the eco-movements is to counter numbing. We cannot afford to wait for more and bigger catastrophes to awake the decision-makers out of their slumber.

B. DIFFERENT TYPES OF ACTION

In this section we survey different types of action and correlate them to particular perceptions. However, it should be kept in mind from the outset that the same type of action may fulfill different functions, depending on the ideological and organisational framework in which it takes place. A local eco-project may be a hobby-like escape of middle-class eco-friends, or it may be part of a business-funded, profit-oriented scheme. But it might also be an experimental, constructive project linked with a larger eco-movement.

1. Cleaner Technologies, Greater Efficiency

Neo-liberals and technocrats are finally coming to acknowledge that too much waste and pollution is generated and that limited resources have to be used more efficiently. Of course, such admissions are welcome. Better late than never. However, we have to be alert when it comes to their practical solutions. Because they may be too little too late.

Neo-liberals will tend to suggest that the market can take care of the eco-problems if eco-costs are no longer externalised but incorporated into the price of goods and services. As a result, the argument goes, there will be incentives to invent and use cleaner and more efficient technologies, which will reduce the wasteful extraction of raw materials and pollution through the wasteful use of energy.

No doubt, impressive progress has been made during the last few decades in the research and application of more eco-friendly technologies. The reports of the World Watch Institute⁶ and the CSE document how much can already be done differently. And they nurture hope that scientists and technologists will come up with still better solutions in the future. This technological optimism is attractive as it reorients the powerful faith in technological progress which has stimulated people during the earlier industrial revolution. It rescues this faith – which is now being undermined through the gloomy prospects of the eco-crisis – from fatalistic pessimism by opening up a new bright future of technological and industrial revolution.

“Shaping the Next Industrial Revolution” is the title of the concluding essay in “**State of the World 1993**”,⁷ which sums up this approach. It starts with the environmental damage and debt caused by the first industrial revolution, it acknowledges that elected govts. have the primary responsibility to create a “sustainable economic system”, and then focuses on the central role of private industry. It assumes that big and small business, spurred on by competition, will reform themselves and respond to the ecological challenges by embarking on new eco-friendly technologies which will bring them high or even higher profits. “Once seen as a distraction to the real business of business, environmental concerns are becoming an engine of the next Industrial Revolution.” The authors admit that there are

E-100

08346 1799



still old-fashioned companies which see environmental regulations and concerns as a threat to their profit margin. But they are confident that the future belongs to those who invest in new technologies, and they call on consumers and govts. to exert pressure in that direction. Arguing in terms of profit, they predict that the market in more energy-efficient equipment may reach hundreds of billions of dollars annually. As in that way sustainable development becomes profitable, they expect that "most companies will pursue it".

Once again, cleaner technologies and more efficiency in the use of energy, the extraction of raw materials and recycling are all to be welcomed. This is bound to play an important role in the necessary eco-orientation of the economy and society. But the question is whether it can be left to the companies and their researchers and engineers to lead us into a viable future. What about those companies which continue to employ destructive production methods? What about the pressures of economic growth on all companies? Can they survive in the long-run when they start producing – as they should – durable products which are not designed to be replaced soon? What are they going to do once the market is saturated?

Let us take the example of the car industry. Harmful emissions can be reduced, let us say by half. But the effect is nullified if the number of cars doubles. Even if the dirty gasoline-powered internal combustion engines are on the way out, as the World Watch authors predict, we are not yet out of the woods. Electric cars and hydrogen-powered cars have been announced. That would take care of the problem of emissions. But it does not settle the problem of the space, the land occupied by cars if used as means of mass transport. It does not take into account the materials used for the construction of cars, and if much of these can be recycled, there is still the energy bill for construction and recycling to be paid.

The point which this illustrates is that the eco-crisis cannot be dealt with by technological means only. It raises questions about how society is organised, including the role of companies, the logic of profit-making they are subjected to, and the demands of consumers who want their private mobility not to be curbed. If we want a sustainable economy we have to face not only technological but also social, economic, political and ethical questions.

2. Wildlife Protection

The threat of the extinction of various species is not new. Neither is human intervention to protect endangered species. Since ancient days there have been protective measures. Local communities had customary rules and religious taboos which regulated the cutting of trees and the killing of animals. Emperor Ashoka decreed in his pillar edicts the protection of certain animals and birds. And in the Arthashastra reserves are being set aside to safeguard elephants.⁸ The catastrophic extent of the humanly induced extinction of species which has nowadays alerted various groups of people, is however new. On the one hand, we find local communities which have taken up the fight against the cutting or submersion of forests on which they depend for their livelihood. While struggling for their own survival they fight at the same time for the protection of the habitat of flora and fauna in their rich diversity, and for the long-term survival of society at large which depends on biodiversity. On the other hand, we find the Central Govt. taking an interest in wildlife protection. Already in 1952 an Indian Board for Wildlife was set up. And in 1973 the Project Tiger was launched, at that time the largest of its sort in the world.

This has shaped for some time the understanding of eco-concerns and the approach to eco-problems. Leftists could point out that this was an upper-class preoccupation which threw up barriers to job-creating development projects. Rural movements of affected people opposed the parks for the privileged, as they denied the access to forest resources to those whose livelihood was dependent on them. And the upper and middle-class public was led to believe that the eco-question would be taken care of if sufficient wildlife parks would be created.

Various motives are at work among the wildlife conservationists. They range from princely hunting traditions and romantic-aesthetic love of nature to scientific and economic interests. What they have in common is a negative attitude to the human communities which depend on the forest for their livelihood. These are seen and treated as a threat and disturbance and pushed out for the sake of conservation.

Mahesh Rangarajan describes the hunting mentality which existed among rulers and bureaucrats in colonial and post-colonial days. He gives a vivid picture of the nature-loving tradition in the Nehru family, which prepared Mrs. Gandhi to take a very active interest in wildlife preservation. She entertained good relationships with the elitist World Wildlife Fund, but also with grassroot activists like Sunderlal Bahuguna. She understood that more was at stake than the saving of one or the other species, but she thought – with many others – that the creation of reservation areas would be sufficient. In the 42nd amendment to the constitution during the Emergency, forests and wildlife were annexed to the concurrent list instead of the state list, so that the Union could overrule the states in these matters. She used that power in the case of the Silent Valley dam project in Kerala which was scrapped.⁹ Under her rule the number of national parks increased from 19 to 52, and such parks now cover 4.3% of India's land area. Tiger hunting was stopped, and commercial forestry in core zones halted.

This policy has increasingly been criticised for a number of reasons. It drives out human communities who have lived in these areas since time immemorial. An estimated 4.5 mn people, mainly Adivasis, are affected. Cut off from the sources of their livelihood, they end up in urban slums, whereas the upper-class urban residents enter into these parks as tourists, taking an elephant ride for a photo-safari, having fun and “enjoying nature”.

Poor peasant communities close to the protected areas moreover come under the pressure of animals destroying their crops and occasionally killing people. The compensation paid for a human killed by a tiger is Rs 5000, whereas the fine for killing a tiger is Rs 50,000 plus 10 years imprisonment. While the guns and guards of the state are rather effective in protecting the “sanctuaries” against their original human inhabitants, they conspicuously fail in stopping poachers of animals and smugglers of sandalwood, as the notorious Veerappan case illustrates. At the same time business and “development” pressures are mounting and further undermining the gains made in terms of the protection of endangered species.

Ramachandra Guha has exposed the arrogant antipathy to human beings present in the conservationism of biologists who want to preserve the wilderness for their scientific research.¹⁰ They give tourists, govt. bureaucrats, international conservation organisations, and state foresters a good conscience for their hostile approach to farmers, herders and hunters who lived in the forests before they became sanctuaries. They are “new totemists” who select particular animals as sacred, and impose worldwide a prohibition on their killing. Underlying this approach is a particular idea of human/free “nature” and “wilderness”, which is especially popular in the USA. This “deep ecology” trend will be discussed in the fourth chapter.

Its impact in India can be seen in the controversy over the Nagarhole National Park in Karnataka, which is the habitat for about 40 tigers and home for about 6,000 tribal people, who take from the forest fuel wood, fruit, honey and some small game like partridges. Inside the park the Taj Hotel chain is invited to build a resort, whereas a representative of Wildlife Conservation Society in New York came all the way to Bangalore to demand the expulsion of the tribals in order to save the wilderness. Fortunately more sensitive biologists, such as the famous Indian ornithologist Salim Ali, have asked for a conservationist strategy which takes into account the problems of peasants who lose some animals.

Responding to the need for co-existence between humans and animals, “pragmatic conservationists” – as Rangarajan calls them – have advocated certain interventions and active management, including the selective killing of marauding animals. Both Rangarajan and Guha refer to the work of the ecologist Raman Sukumar and others who share the concern for conserving the species but don’t agree that this implies that each and every individual of the species has to be protected. They prefer a “pragmatic” approach of resource management instead of an approach based on the equality of all human and animal relations. They don’t speak of the inalienable right of all living things to life, and feel free to explore how a better use of resources can improve the livelihood of human communities while protecting the endangered species as a whole.

Another attempt to reconcile the conservation of endangered species and the survival of traditional communities is to use the traditional skills of Adivasis within the set-up of the modern market economy. The Chennai Snake Park and Crocodile Farm are examples of this approach. We find this approach also in forestry, for example in Joint Forest Management programmes and the formation of forest protection committees.¹¹

Critical intellectuals concerned about ecology have become more and more skeptical about the efficiency of the central state apparatus in securing the protection of endangered species in isolated, large parks. They have come out in support of tribal movements in favour of a co-existence approach in which the local tribal population bears the main responsibility for conservation in “protected areas”. The role of the state would be to give support and incentives, not to do the actual management. The ecologist Madhav Gadgil is an advocate of this approach. The critical question remains how people can be encouraged and enabled to resist the pressures and lure of the intruding market economy which tempts to go for short-term gains at the cost of long-term preservation.

The attention of ecologists is no longer exclusively centered on huge sanctuaries. They have discovered the importance of diverse resource-use systems in the country-side which could be strengthened as part of an overall conservation strategy. They highlight the role of sacred groves¹² in preserving biodiversity and the importance of sustaining common property resources.¹³ This makes it possible for ecologists and rural activists to work out a common perspective for joined action. Rural movements demand access to common property resources, forest land, ponds, pastures and wildlife sanctuaries. In some cases they have actively opposed the formation of wildlife reservations. That does not necessarily mean that they are opposed to conservation. Their interest in the control of resources implies an interest in sustaining and upgrading them. In the case of the struggle for the protection of mixed forests – against commercial interests – it is particularly clear that this serves both ecological and social interests. The conflict between Gujjars and the state over cattle grazing in the Keoladeo Ghana national park led to police-firing in which 9 people died. It is a telling illustration.¹⁴

Yatras have spread the message of connecting survival and conservation issues, and linked local groups. Sunderlal Bahuguna's Kashmir-Kohima trek in 1982, the Western Ghat march in 1987, the coastal fisherfolk march under the motto "Protect Waters, Protect Life" in 1989, the anti-dam march in the Narmada valley in 1992, and the "Save the Forests, Save our Lives" march of forest-dependent people in 1995 have all contributed to this process, though there is still a long way to go till an overall reorientation can take place.

The important result is that through the interaction of these various actors the wildlife conservation issues have become related to the basic issues of alternative development models, violation of human rights, people's control over resources and people's role in the protection of resources. In the process ecologists learn to acknowledge that the human survival issues cannot be ignored, whereas radical social activists have begun to integrate ecological notions and issues into their outlook and agendas.¹⁵ This process is also a fitting reply to the "conservation imperialism" of the "green missionaries" which Ramachandra Guha denounces.

3. Scientific and Financial Eco-Sponsorship

Over the last few decades serious conflicts have arisen over the control of genetic resources which has far-reaching ecological implications, particularly with reference to the issue of biodiversity. The first round of North-South conflicts took place in the context of the green revolution. Research institutes were set up which wanted access to the rich resource base of traditional plant varieties in the South. On the other hand there have been supportive efforts of scientists to collect and preserve traditional knowledge and plant varieties. In India this has been most notably the work of Dr. R.H. Richharia through the Central Rice Research Institute at Cuttack during his tenure as Director (1957-67) and the M.P. Rice Research Institute at Raipur (1971-76), where the tribal heritage was preserved.¹⁶

In spite of Dr. Richharia's protest the Indian govt. agreed to transfer the precious germplasm collection in Raipur to the International Rice Research Institute in Manila (IRRI). This institute was originally set up by the Rockefeller and Ford Foundations and was later connected to the CGIAR (Consultative Group on

International Agriculture Research) which is linked to the World Bank. Claude Alvares called this transfer “The Great Gene Robbery”.¹⁷ His critique focused especially on Dr. M.S. Swaminathan, who has occupied leading positions in the field of agricultural research and policies, including secretaryship in the ministry of agriculture, membership in the Planning Commission, and then the directorship of IRRI in Manila.¹⁸

The present, latest round of conflicts focuses no longer only on the performance and control of the traditional and hybrid rice and wheat varieties of the green revolution. What is at stake now is the spread of the latest technologies of genetic engineering and of agricultural production based on them on the one hand, and the protection of biodiversity and farmers’ interests on the other.

Having signed the GATT-treaty and having become a member of the WTO, India has to change its patent law. The cases of foreign companies trying to acquire patents over products based on neem, turmeric and basmati rice have caused great concern about this form of private “enclosure” of people’s common heritage. Movements, NGOs and scholars have mobilised protest.¹⁹ Political parties have responded by opposing a new patent legislation which would give “exclusive marketing rights” (EMR) to patent holders.²⁰ Others are advising to accept the WTO demand for the time being as a no longer avoidable step, but to try to change the rules of the game on the basis of the “Convention on Biological Diversity” (CBD) of the UN which has been ratified by over 160 countries, including India, with the exception of the USA.²¹ This convention acknowledges that biological diversity resources are the sovereign property of the country of origin, and that benefits should be shared equitably with indigenous communities for their contribution to conservation and knowledge of sustainable uses of biodiversity.

In this connection Dr. M.S. Swaminathan plays again a significant and conspicuous role, this time as Director of the M.S. Swaminathan Research Foundation (MSSRF) in Chennai. His latest interventions in the public debate and through the widespread programmes of his institute speak emphatically of the interests of the Indian farmers and the needs of the “unreached”, women in particular. Simultaneously

eco-concerns are expressed in the familiar terms of “sustainable agricultural and rural development”. The 1997-98 report of the MSSRF gives a review of six programme areas, including ecological, agricultural, technological and social matters. They are Coastal Systems Research; Biodiversity and Biotechnology; Ecotechnology and Sustainable Agriculture; Reaching the Unreached; Education, Communication, Training and Capacity Building; and Special Projects.²² Apparently all the right causes are considered. The report speaks of a “movement for fostering job-led economic growth, based on a pro-nature, pro-poor and pro-women orientation to technology development and dissemination”, in order to “maximise returns from units of land, water and energy”. This will be spearheaded by the J.R.D. Tata Ecotechnology Centre (in MSSRF) by developing a “biovillage model”. One ecologically relevant area of application of this model is the project “Gulf of Mannar Biosphere Reserve”, which the MSSRF prepares on behalf of the govt. It will adopt the new approach of “people protecting the biosphere reserve” instead of protection against “adverse human impact”. However, the reserve is seen as a potential “world ecotourism centre” providing an example of job-led economic growth in biovillages. Moreover, there is a joint research project with the Bhabha Atomic Research Centre (BARC), applying nuclear and biotech tools in eco-management and using seeds developed at BARC through mutation breeding.

While tourism and this alliance with the BARC may raise suspicions, the MSSRF seems a champion of people’s rights and ecology in the matters of seed policy and patenting. It says that it wants to implement the CBD aims regarding conservation, sustainable use and equitable sharing of benefits. It argues in favour of the recognition and rewarding of the contribution of farmers’ communities to conservation and improvement of genetic resources. This can be understood as an acceptance of the critique of Vandana Shiva, Prof. Nanjundasamy and others, whose names are never mentioned, that economists, legislators and WTO are only dealing with plant breeders – researchers and companies – and ignore the rights of the farmers. This is an important admission which can be used to strengthen the case of the farmers and of biodiversity initiatives.

However, Swaminathan obviously refuses to join in the critique of the role of powerful research and company interests whom he designates as “breeders”. He wants to see “farmers and breeders” as “partners in the struggle for sustainable food security”, whose “contributions represent a continuum in the genetic innovation chain”.²³ His strategy becomes clear in his arguments and proposals for a legislation which envisages a National Biodiversity Authority, State Biodiversity Boards and Local Biodiversity Management Committees. He demands clear and simple procedures to calculate the financial benefits for the local communities, so that bioprospecting by researchers will no longer be hampered and “symbolic biopartnerships” will emerge. In short, his basic aim is to arrange for financial compensation to the farmers and thus give researchers and business legal access to the genetic resources under their control.

All this beautiful talk of continuum and biopartnership covers up a new strategy for biopiracy, though there is some financial compensation.²⁴ This approach is integrated into a larger, quite comprehensive perspective which will appeal to policy-makers and far-sighted business interests who have been alerted by the signals of a possible confrontation between peasant organisations, multinational companies and the state. The confrontation with Cargill in Gujarat and Karnataka²⁵ has probably triggered off reflections on how such polarisation can be avoided. Swaminathan’s strategy is to hijack the issues raised by the seed preservation movement, namely those of people’s collective property rights and food security, and make them part of a package deal under the overall leading and guiding role of science. Admitting the “fatigue of the green revolution” – highlighted by Vandana Shiva – he updates and upgrades the same approach by including “social mobilisation” and thus taming it. As he writes in the *Hindu*: “It is only a combination of science, education, social mobilisation and public policy that can help us convert the green revolution into an evergreen revolution” and thus provide food security.²⁶ Through a “well-planned integration of the tools of biotechnology, information technology, space technology and renewable energy and recycling technologies with traditional wisdom and technologies, eco-technologies can provide the scientific foundation” for such a revolution. It is quite obvious who are meant to be in charge

of such an integration process and who will control the resources and set the aims of research. People's participation will only be in data collection and their share will be limited to financial rewards.

That other interests than people's interests are involved in this "pro-poor" and "pro-nature" strategy can be seen from the list of the sponsors and collaborations of the MSSRF, ranging from the National Commission for Women to the Department of Atomic Energy, from the Ministry of Environment and Forests to Assam Asbestos Ltd., Hindustan Auto Distributors and Hindustan Lever Limited, and from the Worldwide Fund for Nature-India to the Department of Biotechnology of the GOI and the US Department of Agriculture. Not a single people's movement is in the picture.

People are meant to cooperate in an integrated, subordinate role, and not to be mobilised and organised around an alternative perspective. And ecological concerns will be taken care of by scientists. This is not to say that all the MSSRF proposes and propagates is to be rejected. Dr. Swaminathan often takes up important issues which are also raised by movements, though he systematically fails to acknowledge the contributions of activists and movements. The critique by the MSSRF of the terminator technology as a terrible threat to "1.4 bn resource-poor farmers" and to the environment²⁷ is well taken and most welcome. Such limited agreement is comparable to the uneasy convergence of traditional fishworkers and trawler-owners – who otherwise are in conflict – in facing high-tech deep-sea fishing technologies and companies.

The question of patent and biodiversity legislation confronts people with a basic political choice.²⁸ Swaminathan and Madhav Gadgil and others propose improved legislations within the WTO framework which they consider irreversible. This may be helpful upto a point. Movements and scientists/activists like Vandana Shiva and Prof. Nanjundaswamy however oppose this approach. The implication of their stand is to advocate India's withdrawal from the WTO. From the perspective of an eco-friendly, people-centered development, the question is indeed: why not?²⁹

4. Towards Rural Survival and Revival

In this section we present a few examples of a more people-centered approach which differs from the state-bureaucracy-centered, partisan science-guided and commercially oriented approach. In this approach the aim to overcome poverty and the aim to protect and improve the environment are not conflicting but converging. The basic assumption of this approach is that mass poverty and eco-crisis have to be overcome simultaneously. This is necessary and possible because a fundamental cause of poverty in India is the lack of access to biomass resources which are needed to meet daily basic needs like food, fodder, fuel, manure, building materials and artisanal raw materials. This means that the key is not the increase of cash crops for export – as the govt., IMF/WB and TNCs think – but the “increase of biomass production on a sustainable and equitable basis”.³⁰ That requires careful water management, prevention of soil erosion, upgrading of eroded lands, protecting and planting trees, etc. This becomes feasible if local people irrespective of gender and caste participate in planning and in sharing the fruits of the work. Experience has shown that eco-projects of afforestation, soil improvement and the like succeed only if the local landless poor, women and other resource-poor people have a stake in them.³¹

Govt. schemes usually suffer from a lack of people's participation and from a lack of appreciation of people's traditional knowledge and their perception of the problems involved. They are hindered by bureaucratisation and departmentalism. The govt. forestry policy basically ignores the plight of the poor and their need of access to forest resources, and its anti-poverty programmes eventually ignore the role of the environment in the sustenance of the poor.

NGOs have other limitations. They may want, and try, to project an alternative perspective but they cannot afford to confront the state. They are mostly dependent on foreign funds and at least a part of their leadership is not elected by the people but appointed by outside institutions or agencies. This explains why many of them tend to co-operate with govt. agencies such as CAPART and NABARD and prefer the method of “advocacy” over mass mobilisation. As self-appointed advocates NGO fulltimers may promote people's causes

and indeed achieve certain things. But this method obviously has its limits, as compared to mass mobilisation for political pressure. For that social movements are needed. However, some NGOs have been able to make significant contributions in experiments at the micro-level which can help movements in their search for alternative policies. Some have succeeded in showing how improving the environment can result in improving the living conditions and health standards of local populations.³²

4. a. Local Experiences

Deforestation is one of the main ecological concerns, as we have seen in ch.1. Unlike other problems such as air pollution this has been recognised and taken up by the govt. in various ways. One path is the formation of wildlife reservations. Various programmes of “social forestry” and “wasteland development” were also launched in the 70s and 80s. These programmes were based on a particular analysis of the main causes of deforestation. The tendency was to blame the rural poor as the culprits who exerted pressure on the forests through increasing overgrazing and fuel wood collection, due to the growth of population. The role of commercial logging for the sake of timber and pulp – and state revenue – was underplayed. “Social forestry was propagated as forestry ‘for the people, with the people and by the people’.” It was said to be designed to cater to their needs. It received much support from the World Bank, Sweden, UK and USA.³³ Three types of plantation were recommended: community woodlots, strip plantations and farm forestry. Critical evaluations of what actually happened show that the main benefits went to private farmers who started forest plantations on their lands. Most often they grew eucalyptus trees which generate income through sale to pulp and rayon factories. The aim of increasing the supply of fuel wood, fodder and small timber for local people was hardly achieved. The main criticism has been the lack of people’s participation.³⁴ Actually the poor suffered, because the conversion of agricultural land to eucalyptus plantation meant loss of wages, food production and food for consumption, agricultural waste for fodder and fuel, and sometimes common land.

The basic drawback of the govt. forest policy was its industrial and commercial orientation. This was an unbroken continuation of

the colonial policies.³⁵ The state claimed ownership and exclusive control whereas community participation in forest management was rejected.³⁶ As a result forest departments and local people were at loggerheads.³⁷ This did not only affect people's livelihood. It also led to a delegitimation of people's knowledge about species and their use. The foresters became the only experts. But they were guided by the objective of supplying raw materials to pulp and rayon factories. Thus they did not mind cutting existing forests and replacing them with fast-growing, commercially attractive species such as eucalyptus, with the well-known negative consequences for the people and the environment. The same objective dominated the social forestry programmes. In short, people's rights, people's knowledge and people's needs were ignored.

As a result, forest and forestry got separated or disembedded from the other aspects of the rural economy.³⁸ Traditionally, forestry played a role in providing food, fodder and fertiliser for rural consumption. Modernisation in the form of "scientific" forestry has been blind to this connection. Any attempt to restore an ecological balance will have to overcome this separation of knowledge from local communities.³⁹

Voluntary agencies also have far too often entered local situations with assumptions and plans which ignored people's traditional knowledge and perceptions. Yet, some of them have learnt in the process of close interaction and listening to people's suggestions.

Eva Cheuvy Robinson has studied the performance of three NGOs in Andhra Pradesh, which shows that it is possible within local limits to reintegrate forestry and agriculture, and to improve simultaneously biodiversity, natural resources and the economic well-being of local communities. All three benefited in their learning process from using the methodology of PRA, Participatory Rural Appraisal.⁴⁰ Of course, this method can also be used to extract indigenous knowledge in order to incorporate it into scientific knowledge and make it serve other purposes beyond people's control and against their interests, as we have seen earlier. But here we hear of processes in which rural people's knowledge about subsistence forestry validates alternative ways of knowing for both villagers and outsiders. Outsiders learn that

trees have not only market value, but that it makes sense to grow them for various useful purposes rather than for sale only. Outsiders who are motivated by ecological concerns also learn to acknowledge people's survival needs. Thus plans evolved which took care of regeneration of natural resources, e.g. through temporary protection of marked areas for natural regeneration, and cultivation of species for food and fodder and fruits, including products for sale.

Let us give an example from KIPDOW, an organisation sponsored by Myrada. "KIPDOW staff did not impose on the villagers a perspective which saw forestry only as saplings planted in the Reserve Forest or a farmer's field. Together with animal husbandry and agriculture, local people saw forestry as embedded in the rural economy and linked to soil conservation. Increasing tree assets was interwoven with the availability of fodder for grazing and the productivity of agricultural land. Improved fodder seeds were provided along with measures of protection for local grasses and encouragement of stall feeding."⁴¹

The alternative becomes visible in the practice of fencing. Instead of the govt. fencing the forest from the people, people start fencing their own resources, protecting them for their own use. Thus regeneration of natural resources, survival and economic revival can go together. In the process people benefit from their control of increasing resources whereas their dependency on coolie labour diminishes. These examples are locally limited, but local successes can serve to convince others to try also.

However, it is clear that such examples alone cannot transform the rural economy. Basic obstacles have to be overcome and this requires the co-operation and alliances of movements which operate at the political level. One set of obstacles is the lack of political leverage and the danger of co-option into govt. or business schemes. Secondly, many rural communities have hardly any common resources left. Thirdly, the internal divisions on the basis of gender and caste are the most serious inbuilt obstructions for a reclaiming of people's control over resources. (We will return to these problems in the section on movements.) However, the viability of an alternative perspective which can secure the survival and revival of the rural economy is an additional,

strong argument for the need to struggle against patriarchy, caste and the unjust distribution of resources. As the unfolding scenario of globalisation threatens the long-term survival prospects of the rural poor and the small farmers and artisans, there is all the more reason to connect the struggles against patriarchy and caste domination with the struggles for reviving the rural economy on the basis of people's control, protection and nurturing of resources.

4. b. *Banking on Biomass*

Under this title a "new strategy for sustainable prosperity" is proposed by K.R. Datye with the assistance of Suhas Paranjpe and K.J. Joy.⁴² K.R. Datye is an engineer who has been a student of D.D. Kosambi. He has worked in water supply and large infrastructure projects and has been involved as a volunteer in Gramdan villages in Orissa. He is also part of the inter-disciplinary research group CASAD (Centre for Applied Systems Analysis in Development) and interacts with movements such as the NBA and Bhumi Sena and with People's Science Groups and alternative projects, especially in Maharashtra.

His enthusiastic appreciation of what science-based technology will be able to achieve seems to bring him close to the MSSRF, but there is a world of difference. Like Swaminathan, Datye is not a deep ecologist who is ready to give up economic development in order to save the environment. Both are exploring scientific and technological means to increase productivity in an ecologically sustainable way. But they operate in different frameworks. Swaminathan relates primarily to govt. officials, planners, research establishments and companies as the decisive actors. He plans from above and approaches ecological problems from the perspective of research laboratories and gene banks. People's participation is designed to serve the purposes set within this perspective.

Datye works from below, starting from local ecological and social conditions. He has developed a critique of centralised large-scale irrigation schemes and energy supply systems, on the basis of experience and research. But this critique does not imply an uncritical embrace of traditional Gandhian schemes, which according to him – again on the basis of experience – lack openness towards the need to increase productivity and go beyond subsistence level.

That is why the question of energy and upgraded technologies is addressed. Interacting with people's movements he has developed alternatives to centralised state plans and large-scale business operations from above on the one hand, and isolated, stagnant Gandhian village works on the other hand. This alternative approach gives a central role to local people and to renewable energy as keys to an eco-friendly development, based on increased biomass production. In contrast to the MSSRF schemes, the "banking on biomass" approach starts from below and widens its scope horizontally. It does not calculate primarily in monetary terms but in terms of increased biomass production which improves local ecological and socio-economic conditions. Biomass means food, fodder, firewood, construction material and so forth, which are needed to answer basic needs and form the basis for improved living standards, if its production can be increased.

Datye and his co-workers show that increased biomass production is possible through a transformation of the water harvesting and distribution systems. The crucial point in their approach is not to aim at "maximum returns" and then leave it to the trickle-down effect to benefit people, but to start from basic needs and thus involve all people in the upgrading of their environment for their own benefit. In the background of this approach there are experiments and experiences in Maharashtra around the Baliraja dam in Sangli district and in the Pani Panchayat.⁴³

This approach requires a fresh look at resources and priorities in utilising them. Datye and his team start from water and its distribution. They distinguish between water for basic livelihood needs which should be equitably distributed among all and surplus water for commercial use. The principle of their alternative approach is to determine first the share of each household or person for subsistence needs, on the basis of "assured water" availability. That includes water for drinking, domestic use, cattle, regeneration and basic livelihood, such as cultivation of food-crops for personal use and special measures for the disadvantaged sections. "In fact, one of the principles of the alternative strategy is that no water should be sold on the 'free' market unless livelihood needs in the area are taken care of." "The policy is to ensure a minimum livelihood for all and to regulate all resources

necessary for this, and leave the rest of the resources to be freely utilised by the enterprising.”⁴⁴

Datye and his teammates confidently argue that new low-cost and energy-efficient water technologies, the integration of local watershed development with irrigation systems and the use of local renewable energy resources can bring about a revitalisation of the rural ecology and economy. The vegetative cover can be restored and bioenergy production can assure food security and fuel and fodder self-sufficiency in rural areas.⁴⁵ The bioenergy surplus and the use of appropriate technology can help to build up eco-friendly dispersed industries. Rural artisans can be supplied with local biomass materials and technical innovations can upgrade wood for construction purposes; wood can replace upto 80% of the cement. The book of Datye is full of concrete proposals and detailed calculations which go to show that a people-oriented and eco-friendly reorientation is viable.⁴⁶ The obstacles are in the economic, social, political and ideological spheres. Massive economic interests don't want the rural economy to become more self-sufficient. Local patriarchy and caste hierarchies don't want to share access to vital resources on equal footing with women and Dalits. Political forces are reluctant to confront the vested economic and social interests. And ideologically we are all more or less brainwashed by the dominant development ideas and patterns. That is why movements and struggles are needed to create and expand the space for such alternative approaches, on the long road to a different type of society and economy.

4. c. Delinking from Global Money-Minded Circuits

As discussed earlier, globalisation with its never ending drive for expansion exerts a growing, destructive pressure on the local and planetary ecology in terms of both pollution and rapid depletion of resources. Attempts to resist the globalisation process have therefore to be appreciated as contributions to the search for an eco-friendly economy. During the first decades after independence, India and a number of other countries aimed at reducing economic dependencies and increasing self-reliance. This policy has been abandoned and many people believe – gladly or sadly – that more self-reliance is impossible.

However, as the global economy gets more and more crisis-ridden, the discussion is reopened. Maybe, writes one commentator, those poor African countries which are no longer of any interest to global capital have a chance to rebuild their societies and economies in their own ways.⁴⁷

Even in rich countries attempts are being made to delink and rebuild local and regional economies. Richard Douthwaite, an Irish economist who has worked in the West Indies and is the author of "The Growth Illusion", has written a survey and analysis of attempts to strengthen local economies.⁴⁸ It is meant to give practical tips to British and Irish people on how to go about community economics. The experiences narrated in this study and the reflections on failures and successes can be of help to identify some key issues in any search for a comprehensive alternative.

A number of examples are presented in which communities have tried to cut their dependency on outside banking. They have created micro systems in which local resources are used for local needs. They have set up local credit systems, group currencies and other devices which enable them to bank on themselves. This is very relevant for a long-term ecologically viable economic system, as indebtedness and never ending debt-servicing are not only an economic burden, but a pressurising problem which is addressed at the cost of the environment.

The next area which is crucial for ecological and economic self-reliance is that of energy. It is shown that a combination of wind, hydro and biomass sources – solar may be added – can meet local needs. An important part of moving towards self-reliance in energy is the shift to a less energy-intensive type of food production. Examples show that the transition to organic and other low-external input types of agriculture are needed and possible.

The chapter on "life from the land" is particularly interesting. It argues that communities as much as possible should grow their own food. That gives them control over the safety of their food, whereas one does not know how poisonous the food is which comes from far away. It further gives control over prices. It also saves huge amounts

of fossil energy which otherwise goes into production, processing, packing and transport of food. Most important, it helps to save the farmer, which is a prerequisite for saving biodiversity. The book quotes many examples of "a desperate race between plant breeders and pests" and evokes the possibility of the collapse of modern agriculture which operates on a narrowing genetic base. It shows that the preservation of gene banks is not sufficient. "Diversity, like music or a dialect, is part of the community that produced it. It cannot exist for long without that community and the circumstances that give rise to it."⁴⁹ "Only in use can diversity continue to evolve and no freezing technology can relieve us of the responsibility to preserve agricultural diversity for ourselves and all future generations." The same argument is stressed by Vandana Shiva, Vanaja Ramprasad and others who highlight the need for conservation on site, on the land itself.⁵⁰

Modern agriculture has already destroyed many traditional varieties in countries like Britain. Douthwaite documents efforts of farmers, ecologists and local communities to intervene and save what can still be saved, as part of the effort to shift to a low-external-input system. After initial difficulties, yields increase and competition with the products of chemical agriculture becomes possible. However, this requires the support of communities, which makes it possible to bypass super-markets and wholesalers. This is taking various forms. One of the most popular ways is that of Community Supported Agriculture or Community Shared Agriculture, an approach which is spreading in North-America and Europe. At the end of 1995 there were 600 such community-supported horticultural or agricultural operations involving 100,000 people in the USA alone. In this venture, customers of the local community share the costs, the risks and the harvest. Another form consists in a cooperative owned by the farm workers. In any case, such initiatives eliminate the wholesaler and retailer and save on transport and packaging, while providing fresh food without poisonous chemicals.⁵¹

These and other examples of delinking are important as pointers which signify the willingness to resist the total globalisation and monetization of life. These scattered attempts remain marginal and small. Yet they potentially have a much larger base than we might think. C.T. Kurien and others have pointed out that in spite of the

global sway of capital, an estimated 50% of the economic activities are not following the logic of accumulation, but are motivated by other interests than maximum gain. Within households, between neighbours, and in various non-profit organisations, economic tasks and services are done which have other purposes and rewards. This is an encouraging insight which reminds us that human beings don't fit into the narrow mould of neo-liberal assumptions. They are bound to protest, either by falling sick, going wild or mad, or by joining a protest movement.

5. Struggles and Movements

The types of action discussed so far get support from the state, as in the case of wildlife parks and the Swaminathan Foundation, or they find space to experiment without getting into harsh confrontation with the economic and political powers that be, as in the case of the "banking on biomass" approach.

However, the eco-crisis in its various dimensions has also led to struggles in which people's movements confronted mighty companies and vested economic interests and the repressive power of the state. This is one of the defining characteristics of eco-movements. They address eco-issues in such a way that they make demands on the state and challenge its policies. They ask to stop building destructive dams and nuclear plants. They mobilise against polluting industrial projects and against multinational giants like Cargill, or oppose licences for high-tech deep-sea fishing.

These struggles don't stop at opposing one or the other project. They tend to oppose the whole dominant development model which harms people and the environment. They oppose "destructive development" in order to make place for constructive, eco-friendly, livelihood-providing development. It is not therefore surprising that such a challenge is met by obstruction and eventually repression. This indicates that the powers that be see the seriousness of the challenge.

Antinuclear protesters like Karen Silkwood in the USA have been killed by the nuclear establishment. In 1995 Ken Saro-Wiwa was put to death by the military regime of Nigeria because he and his movement of the Ogoni people challenged the practices of the Shell company. In

their struggle for clean water, clean land and clean air an estimated 1800 Ogoni people were killed.⁵²

Chico Mendes and others have died because they tried to stop the destruction of the rain forest in the Amazon basin in Brazil by logging companies. Judi Bari of the USA-based movement Earth First, who was involved in a non-violent campaign against the destruction of redwoods in California, narrowly survived an assassination attempt through the bombing of her car, for which she herself got arrested by the FBI.⁵³ We don't know whether it was only an accident which killed key members of the movement against the Tehri Dam.

In any case state repression has been used against peaceful demonstrators. The Gandhian campaigner Jaganathan, who was put in prison under the British and again during the Emergency, had to go to jail once again at the age of 86, as he was guilty of leading a non-violent struggle against the prawn-farming business in Thanjavur district. The activists of the Narmada Bachao Andolan have faced ferocious police repression.⁵⁴ The international commission on big dams was not allowed to visit Gujarat. Information about big projects which affect people in great numbers is kept secret.

This indicates that eco-movements have made progress in bringing the eco-issue on the political level. The state cannot ignore this issue any more, though its reaction is predominantly negative at this stage of the conflict. Yet, there is already a growing public awareness which has led to some – though limited – positive reactions. This is part of a long process which has to lead to an overall reorientation, as we will discuss later. In the following selective survey, we group some of the main struggles in India around three major issues, namely struggles over resources, against pollution, and against the economic causes of the eco-crisis.

CHAPTER III

PEOPLE'S MOVEMENTS RAISING ECO-ISSUES

A. STRUGGLES OVER RESOURCES

Strong movements with nationwide support have focused on the question of access to and protection of resources, namely forest, land, water, fish and seeds.

1. Protecting Forests

Struggles in defense of people's rights over forest resources started in the colonial days. Ramachandra Guha describes the pre-colonial system of forest management in the Himalaya hills as one in which village panchayats were in charge, while social and cultural customs, sacred groves and other traditions helped to protect the forest. This was made easier by the fact that the ecology of the hills did not offer scope for big landlordism, so that there was a relatively homogeneous peasantry which dominated the panchayats.

However, as in the plains there were untouchable outcastes, who hardly figure in the narratives of peasant struggles.¹ In this economy, agriculture in the valleys was closely integrated with forestry and pasture on the hill-sides, and subsistence of individual households depended on the "close regulation of the common property resources" by the village.²

All this was undermined by the intervention of "scientific forestry" when the colonial state started to claim the wealth of the forests for railway construction and revenue.³ The customary rights of the villagers were superseded by state monopoly based on "the right of conquest" as the "strongest of all rights".⁴ This became the force of law in the forest act of 1878, which reserved the best part of the forest for timber production. The village people lost control over their resources, and in the process got alienated from the forest which was

no longer theirs. Scientific forestry introduced a new value system in the way of looking at the forest, by defining commercial trees as 'valuable' and commercially less profitable trees such as oak trees as 'inferior'. This change in perception prepared the way for ecological destruction.

The ecological, economic and social consequences have been devastating. The traditional balance which sustained the peasant communities in the hills has gone. They can no longer feed themselves as in the past. This is not only due to population increases but also to declining yields because of the "deterioration of the hill eco-system, in particular the degradation of the hill forests".⁵ Thus many peasants have to "follow their soil down the slopes" and search for work in the plains, whereas the women have to carry the ever increasing burden of collecting fodder and fuel and doing additional agricultural tasks. Yet, some remnants of the earlier economy can still be seen, for example where village forests have been maintained well in comparison with reserved state forests.

The Chipko movement which arose in protest in the 1970s has become known worldwide as an inspiring example of a movement against ecological destruction, in which women played a crucial role.⁶ It is less known how this movement is rooted in a local tradition of peasant protest which has been analysed by Ramachandra Guha.⁷ His study shows how "customary rebellion" (dhandah) by the peasants against wicked state officials – connected with appeals to the ruler – became focused on the denial of customary community rights in favour of modern state forestry. The confrontation deepened and broadened during the 1930s and 1940s. The connection with the Chipko struggle can be illustrated with the references which Bahuguna repeatedly made during his fasts to the student leader Suman who in 1944 died in Tehri jail after an indefinite hunger strike which lasted 84 days.⁸ This continuity implies that the Chipko movement with its environmental agenda is part of a history of peasant resistance against harmful policies of the state. Parallels can be quoted from all over the world, how peasants have fought for "water, land and justice".⁹

The Chipko movement was more successful than many other people's movements in their struggle over resources. Though their

traditional eco-consciousness had been eroded in the process of alienation, the movement was able to revive and heighten the awareness of the people that maintenance of a forest cover is needed for the sake of soil and water. They found a particularly strong response among the women, who had always played a crucial role in the hill economy and whose role had been enhanced by the absence of men who had gone in search of employment. At crucial points they confronted, stopped and even forced the agents of the state to retreat.¹⁰ The heavy damage by floods in 1970 contributed to a renewed eco-awareness. Alerted to the threats to their economic survival by the cutting of forests, people had a tradition of protest against state officials to fall back upon. Leaders like Sunderlal Bahuguna were rooted in that tradition and were able to communicate with the people in an idiom which was familiar to them.

Two factors help to explain the nationwide appeal of the Chipko movement. A certain affinity with Gandhi's non-violent methods and his critique of the drive for modernisation at any cost, which was there among some of the leaders, provided some measure of protection against a more ruthless way of suppressing the protest. Another reason, pointed out by Guha, is the religious significance of the Himalayan region for Hindus, to which the Chipko movement appealed, a factor which is absent in the case of Adivasi-based protests in other forest areas in India.¹¹

Chipko has brought commercial forestry to a standstill in the Himalaya. But other threats to the fragile ecology of the hills emerged, such as big dams and unregulated mining. The different wings of the Chipko movement have taken up these challenges as well. The protest against the Tehri dam could not be sustained on the level of a mass movement. But Bahuguna was able to keep the issue alive and to project alternatives for a sustainable hill economy. His protest linked up with that of the Narmada Bachao Andolan. Other Chipko leaders like Chandi Prasad Bhatt became involved in eco-reconstruction through afforestation camps, biogas plants and other feasible alternative technologies. This brings them close to the efforts we have found in Maharashtra.

Vandana Shiva has placed the Chipko movement and experience into the wider perspective of an eco-feminist view of nature, the forest,

and the role of women in nature, the forest and the food chain. This will be discussed in the next chapter. At this point one eco-relevant aspect of the role of women may be highlighted. Once they get alienated into the cash economy, men may forget more easily and quickly that life cannot be sustained without nurturing. Peasants, women and men, are aware of the need to nurture the soil and have access to water. That is why peasant movements struggling for survival can become – at the same time – eco-movements. Bigger farmers who are integrated into the market economy may forget that, as long as their borewells can tap groundwater. Their movements may focus on free electricity, whatever the environmental cost. Their mode of farming becomes a threat to the environment and to the poor, as they have forgotten about limits. Similarly, fisherwomen had to remind fishermen that they cannot harvest fish unless they also take care that the conditions for the nurturing of fish are not destroyed by harmful technologies. This indicates that the women's voice in people's movements, which speaks of the nurturing of life, is indeed of the utmost importance.

2. Resisting Destructive Development

Big dams have been powerful symbols of economic progress. They played an important role in the spread of the ideology of modern development. They were telling the tale of modern technology and its capacity to harness the forces of nature for human benefit. Generation of electricity for industry, agriculture and domestic use would bring light and goods to all. And water supply for modern agriculture would bring happiness to farmers and more food for all. Of course, a number of people would lose their lands and some forests, agricultural fields, villages and towns would be submerged. But sacrifices for the progress of the nation should be willingly made, provided compensation is given. Yet, reports from all over the world have progressively shown that the benefits have been far less than expected and the costs more.¹²

During the first decades after independence there was a strong ideological consensus that the nation needed those big dams. Local protests by affected people were unable to undermine this conviction. The Mulshi satyagraha against the Tatas building a dam in the Western Ghats in 1921, the protest against the Hirakud dam in Orissa in 1946,

and various protests in the 1950s remained unsuccessful.¹³ On the other hand, the Save the Narmada Movement, the Narmada Bachao Andolan (NBA), was able after more than 10 years of agitation to attract wider and broader support and to slow down or even bring to a halt the further construction of the Sardar Sarovar Dam. Because of the large number of affected people it was able to build up mass support, especially among the Adivasis. At the same time, groups and movements from all over the country extended their support.

Why are these grand constructions opposed as destructive? The NBA shows that no proper, serious assessment has been made of the environmental and social impact. It argues this point on several grounds. Upstream, there will be loss of forests, lands and biological diversity. The aquatic eco-system will be disrupted by the dam. There are dangers of erosion, water-logging, and breeding of vectors of malaria and other diseases in residual water pools. Downstream, aquatic life and fisheries will be affected. In the estuary there will be salt water ingress, salinisation and increased pollution of underground water. Water-logging and salinisation are bound to happen in large parts (55%) of the command area due to surface irrigation. All this will displace people or otherwise affect them: forest dwellers, peasants, fisherfolk.¹⁴ Baba Amte emphasises the economic burden and the destruction of the cultural heritage.¹⁵

The persistent struggle in the Narmada valley has become an inspiring rallying point for all those who are involved in the search for an alternative development model. The gigantic scope of the Narmada Valley Development Plan – with proposals for 30 big dams, 135 medium dams and 3000 small dams, involving the submergence of huge areas of forests and farmlands and affecting lakhs of people – makes it a truly representative symbol of the dominant development model which is increasingly questioned. The protests which started in 1985 initially focused on the issue of the resettlement of displaced people which, as usual, was not properly planned. It soon included the democratic issue of the right to information for those who are affected by such schemes. In 1987 Sarvodaya and Socialist activists declared their total opposition to the dam, as they concluded that satisfactory resettlement for lakhs of people was impossible and that such a huge project would be destructive.¹⁶ Several local organisations came

together in the NBA. The mass convention in Sept. 1989 in Harsud, a town destined to be submerged, demonstrated the scope of mass mobilisation, determination and an emerging alternative vision. An estimated 50,000 people gathered and took a collective oath to resist the pattern of 'destructive development' exemplified by the Sardar Sarovar dam. Adivasis, peasants, activists representing movements and groups from all over the country, intellectuals and some oppositional politicians participated and made the protest a national, political event.

The response of the police apparatuses of the concerned states of M.P., Gujarat and Maharashtra was severe.¹⁷ A mass yatra to Gujarat in Dec. 1990 was stopped by a massive police force at the border between M.P. and Gujarat. Thousands of people camped on the spot in the winter cold for the next 28 days. Seven main activists including Medha Patkar went on fast. Even Baba Amte was not allowed to enter Gujarat. As a result of people's pressure, the World Bank, one of the big sponsors of the dam project, announced an Independent Review. It was the first time that the World Bank agreed to such a review. The fast was called off and the marchers returned with the slogan "Our Rule in Our Villages". During 1991-92 several confrontations took place in and around Manibeli, the first village in Maharashtra to be submerged: a satyagraha of NBA activists as well as a counter-action by pro-dam NGOs from Gujarat, and brutal police actions which were later condemned by the Mumbai High Court.

In June 1992 the Report of the Independent Review of the Sardar Sarovar project came out.¹⁸ Contrary to the expectations of the govt. and World Bank, it endorsed the basic objections and arguments of the protesters and advised the World Bank to withdraw its support. This gave a tremendous boost to the movement. The report is an important source to assess the arguments not only of the Gujarat govt. and its die-hard supporters, but also of researchers who accuse the NBA of "eco-fundamentalism" and the like.¹⁹ After it failed to get away from the recommendation of the Morse Committee, the World Bank withdrew in March 1993. This was a significant victory not only for the people in the Narmada valley, but also for the "victims of Bank-funded 'development' projects all over the world".²⁰

This was followed by a reorientation of the policy of the new M.P. govt., headed by Digvijay Singh. It stopped – for the time being

– police repression, started a dialogue with the NBA, and demanded a reduction of the dam height which would significantly reduce the scope of submergence and the number of affected people. In this matter, the M.P. govt. foregoes its share of power generation in order to save fertile lands and some 32,000 families from displacement. Meanwhile, agitations continued at various points in the 1300 km. long valley. People ousted by the Bargi dam which was completed in 1990 successfully campaigned for full resettlement and control of fish resources in the new reservoir. They organised themselves in 54 fishing cooperatives, capped by their own Fishing and Marketing Federation. However, they had to face govt. repression in further conflicts, which taught them the limits of cooperation with the powers that be.²¹

A new dimension appeared in the struggle against the Maheshwar dam which started in early 1997. About 25,000 villagers captured the dam site in Jan. 1998 and occupied it for 21 days, till the M.P. govt. announced a review and stopped the work. The govt. however went back on its word under the pressure of the private company of S. Kumar which is building the dam. Since then the dam is under siege by the people who block access roads in spite of heavy police repression.

This people's movement, whether it will fully succeed or not, has raised fundamental issues and put them on the national agenda. It asks what is development, whom does it benefit, whom does it harm, and what are the priorities. Some of the basic issues are democratic decision-making, large-scale displacement of people, damaging disturbance of the eco-system, submergence of the cultural heritage, and possible steps towards viable alternatives.²²

The very way in which the "Narmada valley" or "the valley" has become the frame of reference is significant. It points at an eco-region rather than an administrative-political area as the realm for common action. The valley cuts across 3 states: Maharashtra, M.P. and Gujarat. State and party-politics has prevailed in the case of Gujarat, but in Maharashtra and especially in Madhya Pradesh the grassroots mobilisation against the dams has made a remarkable impact at all levels, including the political.

This eco-region moreover contains social cleavages and tensions between Adivasis, caste peasants, Dalits and fisherfolk. As all are affected in one way or the other, the mobilisation under the banners of various organisations and, since 1988, under the NBA banner has brought them together, or at least achieved a measure of interaction and cooperation which did not exist before. However, caste cleavages continue to be a major problem.

It has been pointed out that during the first years of agitation, environmental issues hardly played a role. All the attention was focused on the question of “rehabilitation and resettlement” and the failure of the respective govts. on this point.²³ Even the recent write-up of Sanjay Sangvai, one of the NBA activists is rather low-key in articulating the eco-issue. Yet, it is probably the environmental dimension which has generated nationwide and international interest and support, far beyond the solidarity with the oustees which the first round of agitation had been able to establish.

It might be worthwhile to study more deeply the role of NGOs in these developments. NGOs initially took up the compensation and resettlement issue. Later they got divided, as a number of NGOs in Gujarat were satisfied with the govt. response and supported the SSP dam, whereas other NGOs and activists like Medha Patkar moved towards total opposition to the dam and shifted to movement forms of organisation. In the process, they were exposed along with the people to harsh and brutal state oppression, interspersed with political interaction and dialogue. What enabled them to make this radical move? In the case of Medha Patkar there are clear indications that an intensive interaction with tribal communities guided by a democratic socialist ideological orientation, which was enriched by a growing environmental awareness, drew her into building up a mass movement against the dams and for an alternative development.²⁴ Medha speaks of “environmental socialism” and the “combination of green and red values and ideas”.²⁵

An important factor in the evolution of the movement has been the early insistence on people’s right to information about plans affecting their lives and the consistent efforts to acquire the information and build up specific competence in the issues concerned. This is a

precondition for the emergence of a relevant alternative perspective. Equally important, it appears to me, has been the sustained interaction with local tribal and non-tribal communities, urban activist groups, environmental scientists and the like. This started in 1987-88 when environmentalists began petitioning the GOI and Baba Amte brought together grassroots activists and environmentalists. The emerging comprehensive outlook found an impressive expression in the huge gathering at Harsud in Sept. 1989, which was well covered in the media. The protest went beyond damning the dams and called for an alternative to "destructive development". Activists working in different areas, local people, intellectuals, politicians and the media were exposed to the call for alternative, "sustainable" development. As Baba Amte put it: "The time is ripe for a green front which would act as a pressure group and force parties to take notice of the millions who suffer from the degradation of the environment and the destruction which so-called development projects wreck."²⁶

It is important to note that in this green perspective the issue of what happens to people remains central. A "Draft Perspective" was formulated by Jan Vikas Andolan at a gathering of representatives of mass organisations and groups in Bhopal in Dec. 1989. Having discussed the issues of the Test Range at Baliapal, various big dams, nuclear power plants, land alienation and the loss of access to common property resources, they stated the following: "Janvikas is a movement against the development paradigm being practiced in post-independence India, whereby a narrow elite primarily benefits at the cost of a very large population that continues to be marginalised, displaced and pauperised, along with the large-scale degradation and plundering of our natural resource base. The movement... is not against development. Rather, it maintains that much of what today goes under the name of development is not genuine development but is in fact socially disruptive, biologically and genetically homogenising and environmentally destructive. The Andolan's demand is for real development, in which the over-riding objective is not just a higher growth rate regardless of its human and environmental cost, but the fulfillment of basic human needs and the creation of just and humane conditions of life for all our people."²⁷

This section on the ecology of irrigation may be concluded with a short hint at historical experiences with large-scale and small-scale types of irrigation and their ecological, social and political implications. Karl Wittfogel long ago forwarded the thesis that the despotic rule of early empires was based on the role of the state in providing large-scale public irrigation works which were beyond the capacity of local communities.²⁸ This thesis played a significant role in Marxist theorising about an “Asiatic mode of production”.²⁹ It would be interesting to trace the “despotic” implications in the centralising irrigation works of the colonial state and the post-colonial modern development state. The brutal role of the Gujarat state bureaucracy in defense of the Narmada dam project appears in this light as part of a long tradition.

The question is whether all this was and is unavoidable, as only state investment would be able to harness the resources for irrigation and cultivation on the necessary scales. What is the historical evidence that an alternative in the form of a large number of small dams under people’s control is possible?³⁰ Studies referred to by David Hardiman indicate a varied picture in Indian history. Small-dam systems in South Bihar were not dependent on a centralised state, but on the exploitation of low-caste labour by the gentry-zamindars. In South Tamilnadu kings as well as local communities played a role. In the case of the prosperous kingdom of Baglan in the Western Ghats, studied by Hardiman, the role of the rulers was a supportive one but the role of local communities was crucial. The decay of this economically and ecologically beneficial system was brought about by the disinterest of the British, resettlement by shifting cultivators, deforestation and the collapse of community-based control due to colonial taxation and indebtedness.³¹

Social polarisation which deepened since then makes it difficult to return to a co-operative system which would be economically and ecologically the most desirable option.

3. Protecting Waters

Indian fishworkers have made an important and impressive contribution to creating ecological awareness among different sections of people. Their history of building a movement is a saga of persistence and permanent learning. The first phase of their struggles in the 1970s

was a struggle for survival, directed against money-lenders and traders, foreign schemes of "development" at the cost of artisanal fisheries, and for the restriction of modern methods of fishing such as trawling and purse-seining. Ecological concerns were initially not part of their agenda. But step by step they learnt that their problem was not only one of competition with trawlers over a reasonable share in the catch, but also one of protection and preservation of the resource base, i.e. the coastal eco-systems and marine life, as the material base of their survival in the long run.

This became a matter of study and discussion in their organisations, the co-ops, the unions, the women's organisations and the training programmes. And they made it part of the public debate, as militant struggles forced the govt. in Kerala and other states, and even in New Delhi, to appoint committees, have public hearings and respond to critiques in the media. The debate could no longer be reduced to one on the efficiency of large-scale technologies and on earnings and other economic aspects, it also went into the question of destructive and eco-friendly technologies and the economic efficiency of small-scale fisheries because of its ecological viability as well as other advantages, especially in terms of employment potential.³²

Since the late 1970s the National Fishworkers' Forum (NFF) in which many unions co-operate and which sponsors nation-wide agitations has simultaneously highlighted the need for the conservation of fish resources, the need to protect the livelihood of 6.5 mn fisherfolk and the interests of 100 mn fish-eaters for whom fish used to be a cheap source of protein.³³ A still wider horizon of co-operation with other people's movements was opened up by the Kanyakumari March organised by the NFF in April 1989 under the slogan "Protect Waters – Protect Life". This one-month march down the West and East coasts from Mumbai and Calcutta to Kanyakumari underlined the basic ecological truth that all life-sustaining processes are interconnected. It focused on the multiple threats of deforestation, big dams, pesticides, and toxic effluents of industries which poison drinking water resources and end up in the sea threatening marine life and the reproduction of fish. It also highlighted the risks connected with the construction of nuclear reactors on the coast, as is planned

at Koodankulam near Kanyakumari. The police-firing which broke up the final gathering in Kanyakumari could not hide the fact that this march has made a breakthrough on the way to a comprehensive alternative to the present destructive development concept.³⁴

One of the reasons why the unions of fishworkers could go so far beyond traditional agendas was that as fishworkers they had to fight not for higher wages but for access to and protection of the resources on which their livelihood depended. Of particular importance was that the women of the fishing communities, who traditionally were involved in net making and vending, took part in the processes of organisation and mobilisation.³⁵ They not only highlighted their own specific problems, but made a crucial contribution to the spreading and deepening of ecological awareness, e.g. in the context of campaigns to save and restore mangroves.³⁶

Another contribution to the widening of the agenda of the fishworkers' movement has come from the interaction with critical researchers in institutes such as the Centre of Development Studies in Thiruvananthapuram. Innovative interventions and experiments in conserving and nurturing biodiversity are being attempted, from planting mangroves to the introduction of artificial fish habitats (reefs),³⁷ proposals for coastal area management and designs for an eco-responsible recycling of human waste and waste water in coastal villages.

The combined strength of the traditional knowledge of the fishing communities and modern scientific expertise and documentation work in organisations like the PCO, formed the solid base for the growth of international co-operation with traditional fishing communities in Africa, Asia and Latin America. An International Collective in Support of Fishworkers (ICSF) came into being as a result of the International Conference of Fishworkers and their Supporters in Rome in 1984, which offered an alternative to the official approach to global fisheries at the FAO Conference at the same time. This ICSF is the first global network of this nature which originated and is centered in the South.³⁸

Meanwhile the NFF has become, with the NBA, one of the key constituents of the National Alliance of People's Movements (NAPM), which on the organisational level brings together a wide variety of

issues and concerns. Such interaction creates the space for the process which is needed for a comprehensive alternative development perspective to emerge. Interestingly, the NBA is getting involved in the rehabilitation of oustees from the Burgi dam in M.P., the first construction in the Narmada valley project. The M.P. govt. indeed gave the NBA the mandate to form the Burgi Dam Ousteas' Fisheries Cooperative Federation.³⁹

As a workers' organisation, the NFF also co-operates with other unions in the informal sector which have formed a National Centre of Labour. The latest organisational effort has been the formation of the World Fishworkers' Forum. Its first president is Tom Kocherry who has been part of the early unionisation efforts in Kerala, the NFF and the NAPM. The need for such a global cooperation from below arises from the insight that an eco-responsible global management of the seas and their resources has to be achieved by curtailing the destructive technologies and predatory practices of TNCs and others which treat global resources as their private domain. We thus see how the marginalised fishing sector has become an integral part of people's movements, how in that process of integration the eco-question is an important linking factor, and how traditional knowledge and practices can contribute to evolving new practices of responsible resource management.⁴⁰

4. Resisting Biopiracy

We have already discussed the dangers of dwindling biodiversity (Ch. I B. 2) and the responses of scientists and legislators (Ch. II B. 3). Let us now look at the urgent warning signals given by peasant movements and NGO lobbies regarding biopiracy and at efforts to protect the rich life-heritage of traditional seed varieties and eco-systems. At stake are people's control over seed resources, food security and biodiversity, which are all under threat by the TNCs move to establish total control over the cultivation processes.

4. a. Peasant Movements

In some parts of India peasant movements have mobilised to resist the onslaught of TNCs under the new liberalisation policy which drastically reduces the duty on imported seeds, and gives access to

land and water resources. The food giant Cargill tried to enter the seed business in India in the early 1990s by setting up a joint venture company – Cargill Seeds India – with TEDCO, a subsidiary of TATA. The Karnataka Rajya Raitha Sangha (KRRS) led by Prof. M.O. Nanjundaswamy conducted a massive, successful campaign against its seed processing factory at Bellary which was razed to the ground.⁴¹

Peasant movements, mainly from the North gathered in New Delhi at Kisan Ghat for a “desh bachao” (save the country) Mahapanchayat which had been called by the BKU leader Ch. Mahendra Singh Tikait. It issued a Farmers’ Charter and called on the govt. to save land, water, animal wealth, seeds and peasant livelihoods. It opposed new patent laws “which are converting seeds from being a resource owned collectively by farmers into the private monopoly of Transnational Seed Companies”. It asserted that the farmers are the “original breeders” who have a “fundamental right to exclude patents on plants and life-forms because they violate our ethical values and our cultural traditions”.⁴²

In 1998 farmers organisations in Karnataka and Andhra Pradesh started militant action against another giant, Monsanto, and its field trials.

4. b. Conservation Efforts

As important as active and massive resistance against the TNCs and their practices are the efforts to preserve traditional seed varieties by cultivating them in farmers’ fields, rather than preserving them only in seed-banks if at all. It is at this point that the eco-connection becomes most visible. The struggle of the farmers to control their own seeds includes their concerted efforts to keep the rich heritage of seeds alive through cultivation. And this contributes to the preservation of biodiversity. Eco-minded scientists and NGOs are playing a significant role in stimulating such efforts in local experiments. Navdanya highlights the connection by listing the rights of farmers as follows:

- the right to land;
- the right to just agricultural prices;
- the right to feed the country;
- the right to seeds;
- the right to participatory research; and

- the right to conserve biodiversity through the implementation of farmers' rights.⁴³ The other side of this affirmation of farmers' rights is the documentation and analysis of the violation of these rights, especially by TNCs and govt. policies – which is needed to motivate, inform and equip protest movements.⁴⁴

Two examples of local conservation initiatives may be given. Activists and farmers associated with the *Kisani Samvardhan Kendra* (Centre for Conservation of Traditional Farming Systems) in Indore have, since 1995, tried to reintroduce traditional seeds which were widely used in the area of the Malwa plateau and which were almost totally extinguished because they were replaced by HYV seeds.⁴⁵ However, the green revolution methods have become so expensive in terms of input and unsustainable in terms of water availability, that the restoration of traditional farming practices can be understood as the best way out of its trap, especially for poor farmers, for food security, employment and the environment. The *Sarvodaya Shikshan Samiti* and the *Kasturba Trust* in Indore have made land available for the first trials, which points at the affinity with the Gandhian tradition.

Claude Alvares reports another initiative in Pattuvam, a village in North Kerala which set up a Forum for the Protection of People's Biodiversity.⁴⁶ After the Navdanya staff had introduced the village to the question of biodiversity, the villagers (especially the youth) surveyed the available resources. Out of more than 100 varieties of rice in the past, 26 were found to have been kept alive by old farmers. A biodiversity register was prepared without giving clues to outsiders about the specific locations of rare plants. In view of the GATT treaty they decided to make an official declaration placing all identified genetic resources under the jurisdiction of the village panchayat on the basis of the 73rd amendment of the Constitution. In a ceremony an old farmer handed the register to a girl child who handed it to the village sarpanch, Ms. Kamalakshi. The resources will be made accessible to other village communities, but no person or company will be allowed a monopoly for purposes of patenting.

4. c. Informing, Lobbying

The struggle against biopiracy requires a combination of local alertness and readiness for action and the capacity to reach out at the

national and global levels to concerned persons, groups and institutions in order to inform and influence media, policies and law-makers. The impact of well-documented lobbying can be seen at the international level in the proceedings of the Conference of Parties of the Convention on Biological Diversity. It decided in 1995, in spite of pressures from the biotech companies, to prepare a legally binding Biosafety Protocol.⁴⁷ NGOs such as Third World Network, GRAIN, Greenpeace and others have played an important role in this.

To speak in terms of “struggle” is not an exaggeration. The TNCs are ruthless in their pursuit of profits and control over markets. The environment and people are harmed in the process, including journalists who dare to speak out.⁴⁸ Andrew Rowell has composed a frightening documentation of the PR tricks, lies and violence used by TNCs and their supporters to suppress the environmental movement, which has replaced the communists as a threat to their operations.⁴⁹

In India we are fortunate that there is a relatively large space for protest. Yet it is difficult to keep up with the rapid developments. An impressive example of an up-to-date, well-informed intervention in response to suspected conspiracies and policy measures is the Oct. 1998 publication of Navdanya, “Mustard or Soya”, just two months after the dropsy epidemic due to adulterated mustard oil and the ban on indigenous oilseeds by the govt.⁵⁰ The research team raises the question whether there was a conspiracy behind the widespread mustard oil adulteration which caused sickness and death in many states in North India and especially in Delhi. This was unlike the usual local adulteration, for it occurred in many places at the same time (Aug. 1998) and with an unprecedented high level of adulteration. It appears that it was meant to be noticed and to provoke the govt. ban on all unpacked edible oils. This is a blow to the small-scale processing of edible oils at the household and community levels which is crucial for the food economy of the poor. The Rajasthan Oil Industries Association has demanded a CBI inquiry. The question to be asked is who benefited from this tragedy and the govt. response. After its ban, the govt. announced the free import of oilseeds, especially soyabeans. Just prior to the dropsy epidemic there had been widespread protests against the import of soyabeans from the US, which could be contaminated with genetically engineered soya, the Round-up Ready

Soyabeans of Monsanto.⁵¹ The Navdanya study fears that the ban will lead to the killing of the domestic oil industry and the traditionally rich variety in oilseed cultivation in Indian agriculture. It is striking to note to which extent the BJP govt. is co-operating with, or surrendering to, the TNCs and thus undermining Indian culture which is organically linked with its agriculture.

B. STRUGGLES AGAINST HAZARDOUS INDUSTRIES

1. Bhopal and After

On the night of 2nd Dec. 1984, 40 tonnes of deadly poisonous MIC gas escaped from the pesticide plant of Union Carbide India Ltd. (UCIL) in Bhopal, spreading death and disabling diseases through the crowded city. The estimates of the number of people who were gassed to death and of those who survived but were permanently or temporarily affected widely differ.⁵² Dr. Rosalie Berthell of the International Medical Commission Bhopal estimated in 1997 a death count of "a little over 10,000 now", and around 500,000 who were originally exposed and "about 50,000 who are permanently damaged".⁵³

This tragic industrial disaster confronts us with a chain of problems which connect TNCs, technological and economic development, social injustice, political irresponsibility, people's struggles for survival, environmental issues and the question of development alternatives. As Rosalie Berthell observes, "we need to rethink what we make, and realise you can't put all your efforts into producing death and think it is going to be compatible with life". There is a need for "clarification and codification of the human right to life and health, because it is being threatened... by industrial, technological and military activities".⁵⁴

1. a. A Poisoned World

"A poisoned world" is how Sanjoy Hazarika titles a chapter on a whole series of cases of damage to health and environment caused by chemical industries.⁵⁵ He opens his introduction with a quote from Monsanto: "Without chemicals, life itself would be impossible."⁵⁶ The chemical industry claims to serve life. Its products are "pest" and

“weed” killers, which are used to grow food. Seveso and Bhopal have shown that we are asked to trust deadly substances which don’t kill only pests, but humans, animals and plants. Bhopal has shown how we all are linked up in a dangerous process: workers in chemical plants, slum dwellers around the factory, travellers in the nearby station, rural workers and peasants spraying pesticides and consumers of food with poisonous residues. This is a challenge to turn to industrial and agricultural alternatives which do not carry such deadly dangers. MIC and the like cannot be good for humans and the environment.

The problem is that the chemical industries will not voluntarily take to less hazardous production processes, because there is less or no business for them in organic farming. If at all they change, they will turn to new risky ventures like genetic manipulated products as Monsanto is doing. Thus there is a deadly conflict between the vested interests of companies and bureaucrats linked up to them on the one hand, and affected people on the other hand.

1. b. Justice Today

In the case of a natural catastrophe like an earthquake, there may be callousness, inefficiency and greed among some people, but there will also be human solidarity, generosity and combined efforts to help the victims. The Bhopal story shows that in the case of an industrial catastrophe the victims are up against powerful vested interests who refuse to give compensation and deny medical evidence. In short, they don’t support the victims but force them to organise themselves in a desperate struggle for their rights and their survival. People who were gasping for breath on that fateful night and barely survived have been struggling since then for more than 14 years for compensation, medical care and livelihood. They had to face a company which put the blame on a single worker, never apologised for the many, many lapses in safety measures in spite of earlier accidents and timely warnings, and then got away with a settlement proposed by the Supreme Court (SC) in 1989 which was so favourable to the UCIL that its stock price rose \$2 on the New York Stock Exchange on the day it was announced.⁵⁷ It was a signal not only to the UCIL but to all TNCs that India was keen not to frighten them away by tough measures.

In such a conflict the struggle for justice assumes new dimensions. Not only workers were affected. Thousands of people were living on the other side of the compound wall in a crowded shanty town called Jayaprakash Nagar and other close-by slums. Such are the hazardous places next to factories and toxic dumping places where poor people all over the world are left to live. The poor are the first to be hit by accidents and the ongoing exposure to health hazards. They suffer not only from the injustice of low wages and non-existent safety measures within the factories, but also from the injustice of being denied healthy space and air to live. The struggle for a healthy environment thus becomes part of the class struggle.

1. c. People's Struggle

From the outset people have formed some organisations to collect information, insist on the right to know, protest against UCIL, and pressurise the govts. in Bhopal and Delhi. Activists, lawyers, medical doctors from all over the country tried to support them. International support groups also played a helpful role, e.g. The International Coalition for Justice in Bhopal, of which Ward Morehouse is one of the founders. Without these struggles the situation of the victims would be worse.

The organisation of Bhopal Women-Worker Victims, BGPMUS has played a crucial role in the sustained mobilisation of the victims.⁵⁸ Dec. 3rd. has been a day of protest for 14 years. After the 1989 SC verdict, protest demonstrations were held in Delhi where the UCIL office was ransacked. It was followed by a Quit India agitation. The new Janata Dal govt. under V.P. Singh responded with interim relief measures, but the state govts. in Bhopal were extremely unhelpful. The state BJP turned against the victims after coming to power in 1990. Relief money was used for slum demolitions which displaced many of those who had been affected by the 1984 disaster. The confrontation assumed a communal dimension in the riots after the destruction of the mosque in Ayodhya, because – as Amrita Basu points out – a majority of the gas victims and the members of the leading people's organisations were Muslim. In the riots, 143 persons were killed and about 30,000 displaced.

In the struggle for the access to resources, as in the struggle against pollution and industrial hazards and for relief in the case of accidents, social divisions in terms of class, caste and religion affect the struggle for justice. That is one of the main reasons why we cannot treat the eco-question as a separate, natural and technical question, but have to emphasise the need to speak of “eco-justice”, that is, equal access to resources and equal protection against hazards.

This struggle has a global dimension. It is not accidental that Union Carbide is one of the big transnational companies, number 37 on the list of Fortune 500 before and number 39 after the gas leak, with greater sales than the GNP of Kenya or Burma.⁵⁹ Of course, there are many polluting industries in the informal and small-scale sector as well. But in the case of the UCIL we deal with one of those powerful companies which can well afford to take the strictest measures for the protection of the work force and the environment, but which are found again and again to reduce such measures in order to increase profits or cut losses. It is one of the reasons why they invest in Third World Countries where legislative rules and govt. controls are less strict. This also applies to India, where there may be bureaucratic hurdles, but where – in the words of Praful Bidwai – “no industry or company needs in practice to obtain anything resembling a safety clearance from a half-way competent agency before it begins to poison its staff or pollute the environment”.⁶⁰ There are very few convictions under the various environmental laws.⁶¹ And safety standards are low.

This leads to the question whether India has to live with the risks of letting TNCs freely enter the country, while trying to build a technical, medical and legal infrastructure to cope with such disasters. Or should it not rather opt for another development path, as Praful Bidwai suggests, when he counterposes the two options: “The first represents a fiercely invasive, essentially imitative, extremely elitist, highly iniquitous, North-dominated path that will etch all the ills of western society upon our social fabric. The second is an entirely different model of social development, perhaps slower, but less unbalanced, far from imitative, more equitable and equal, non-predatory, more democratic, less convulsive, more integrated and more human”.⁶²

2. Waking up to the Hazards of Nuclear Energy

The tremendous destructive potential of nuclear energy attracted research funds from military sources during the Second World War. After the war the nuclear arms race took off. At the same time, nuclear energy was heralded as the peaceful solution to the increasing demands for electricity. It was claimed that nuclear energy offered a clean, cheap and inexhaustible source of energy for growing economies all around the world. In India Jawaharlal Nehru and Dr. Homi Bhabha vigorously promoted the development of a nuclear energy establishment.⁶³ It took time, as elsewhere in the world, before critical voices started alerting the politicians and the public to the uncontrollable dangers not only of nuclear bombs but also of “peaceful” yet radioactive nuclear plants.⁶⁴

The infrastructure for nuclear research and the construction of the first three nuclear reactors, Tarapur near Mumbai (TAPS), Rajasthan Atomic Power Project (RAPP) near Kota, and Kalpakkam near Chennai (MAPP), were completed without much protest. There was rather a tendency to take pride in the achievements of Indian scientists and to hope that this would be a decisive step towards economic development.

During the 1970s a few voices started raising critical questions but they found it difficult to be heard by a wider audience. They were hindered by the secrecy surrounding the nuclear energy programme, as it was run by the Atomic Energy Commission of India and shielded by the Official Secrets Act. However, critical scientists and activists studied the problems and acquired competence to challenge the official line in later years.

The sanctioning of the Narora Atomic Power Project in 1973 met with opposition from the Environmentalist Scientific Group at BARC. A major breakthrough towards a public debate and the spreading of critical awareness happened as a result of the Chernobyl meltdown in April 1986. The fall-out of this disaster caused not only widespread deaths in the Ukraine and beyond, but it also shattered the confidence in the usual assurances that nuclear reactors are perfectly safe. Reports about accidents elsewhere which came close to a meltdown and which had been covered up increased public concern. The isolated

critics got a wider audience. New projects encountered growing opposition. This was the case around Kakrapad in Gujarat, Kaiga in Karnataka, Peringome in Kerala, and Koodankulam in Tamilnadu.

In Gujarat the Vedchhi-based Anumukti group took the lead in raising awareness by training young people in non-violent methods of protest, cycle rallies, village meetings and protest meetings on Hiroshima Day. Their health-impact studies have been eye-openers. They have for years published the magazine *Anumukti* which is a rich source of information about nuclear technology and anti-nuclear movements.⁶⁵ They have developed links with protest movements in other parts of the country.

The plans for a nuclear plant at Kaiga in the forests of the Western Ghats in North Karnataka attracted protests as well from affected local communities as from environmentalists who are concerned about the impact of such a huge construction on the fragile forest environment.⁶⁶ The public response to the anti-Kaiga protests pressurised the Karnataka govt. into arranging a public debate on the pros and cons. This amounted at least to the admission that there could be a problem. Nuclear energy as a problem had arrived on the public agenda.⁶⁷ Scientists differed but even some of the supporters of nuclear energy opposed the Kaiga project on ecological grounds.⁶⁸

A cycle rally in 1992 linked up the local anti-nuclear protests in Gujarat, Maharashtra, Karnataka and Kerala.⁶⁹ The protesters in Kerala successfully harped on the argument of density of population, which would make a nuclear reactor too much of a risk. The plans for a plant in Peringome, North Kerala, were indeed dropped. This carried the debate beyond the "not-in-my-backyard-syndrome". If it is admittedly too much of a risk in a densely populated area, then it is also a risk for people in less densely populated areas. Why should they be exposed to the risk in order to supply electricity to the densely populated areas?

The issue of 2 big reactors to be built in Koodankulam near Nagercoil was taken up by a large number of groups which participated in the 1989 Coastal March organised by the NFF under the slogan "Protect Waters – Protect Life". The final rally on May 1st was broken up by police-firing, which indicated the intention of the State

to repress widespread protest against its nuclear plans. The Coastal March linked a wide range of economic and ecological concerns, focusing on water. It drew attention to the problem of water supply to nuclear plants and the possible effects of the release of huge quantities of heated water on marine life. The protest against the Koodankulam plans has been revived in 1998 after the govts. of India and Russia signed an agreement to go ahead with designing, planning and implementing the construction. In the shadow of the clouds which rose from the Pokharan explosions, this will be the test case to see whether larger groups of people can be mobilised to stop this irresponsible plan of the nuclear establishment and to rally forces supporting an alternative energy policy.

To raise the level of awareness a lot of information has to be spread about the following issues:

a. Health Hazards of Uranium Mining

The health of tribals and others employed in the uranium mines of Jharkhand is being destroyed.⁷⁰

b. Accident Risks because of Floods, Earthquakes and Rising Sea Levels

The nuclear reactor in Gujarat was flooded by excessive unforeseen rains in 1994, and this would have caused a major disaster if the reactor had not been shut down for repairs.⁷¹

The reactor in Narora is located in a seismic danger zone.⁷²

Several reactors, including the one planned for Koodankulam are close to the sea. What will happen when the predicted rise of the sea level affects their functioning?

c. Engineering Mistakes

The collapse of the dome of the Kaiga plant⁷³ was a strong reminder that we don't have a guarantee against construction mistakes. Experts have pointed out a number of safety problems in various types of reactors. Accidents confirm their fears.⁷⁴

d. War-Related Risks

Even if all nuclear reactors would function perfectly, there is the major risk of nuclear disaster in time of war, through missile or bomb attacks on nuclear reactors.

e. Permanent Risks

Even if earthquakes, floods, technical failures and bomb attacks don't affect a nuclear reactor, it is a daily threat to its environment through the radiation which is released. And it is a threat to present and future generations because there is no satisfactory solution to the problem of disposal of huge amounts of radioactive waste.⁷⁵

Having perceived these basic threats, various movements have made protests against nuclear energy part of their agenda. They include the NFF, NBA and NAPM. The Medico Friend Circle may speak for them all. Its XVI annual meet on "Radiation and Health" held at Gandhigram Rural University in Jan. 1990, resolved "to oppose the production and use of nuclear energy as being too hazardous for the health of human beings and to demand that existing nuclear facilities be de-commissioned and no new nuclear plants be built".⁷⁶

Relatively small incidents help to highlight how serious the dangers are. In Oct. 1993 hundreds of workers were put to work to build a temporary embankment on the banks of the Cooum in Chennai. About 16,000 tonnes of gravel and 10,000 bags of sand were put to use. Reason: fear of radioactivity. Employees of an American Oil Company had thrown three radioactive sources into the river. Remote controlled equipment was used to extricate a two and a half inch long capsule containing 150 gms. of caesium-137.⁷⁷

3. Pioneer Struggles against Globalisation of Industrial Pollution

Industrial mega projects have caused social and environmental damage from the outset of modernisation and industrialisation. But it seems there was hardly any resistance on a mass scale in the early decades after independence. People had probably vested so much hope in modern development that they did not dare to try to interfere with the juggernaut of industrialisation, in spite of large-scale displacement and pollution. During the 1970s intellectuals and researchers started raising their voice.⁷⁸ Some struggles evolved.

In the eighties and nineties, in the era of liberalisation which increasingly lessened the restrictions and controls on foreign capital,

people's struggles against TNCs reached a new level of confrontation. Whether successful or not – both results happened – the experiences gathered in those pioneering struggles should be helpful in future developments. Obviously consciousness and pressures have increased. People no longer passively endure poisonous leaks and polluted waters from nearby factories. And govts. are under pressure to act, however reluctantly. The response of the legislature and judiciary will be discussed in the next section. We now give two exemplary struggles for discussion: Goans against Thapar-DuPont, and the mobilisation against the Enron-Dabhol project.

3. a. Ousting DuPont

Since 1985 the US Transnational DuPont has tried to establish a Nylon 6,6 factory in Goa. To overcome hurdles, it has made a partnership with the Indian business house of the Thapars. It received the support of the Economic Development Corporation of Goa (EDC), while it assured the public that the production process would not cause any damage to health and environment. The slogan of the Thapar-DuPont company (TDC) was said to be "We Bring Good Things To Life".⁷⁹

An Anti-Nylon 6,6 Citizens' Committee was formed and started alerting the public on the overall negative record of DuPont in environmental matters and on specific problems of the proposed plant. From international environmental groups such as "Friends of the Earth" and "National Toxic Campaign" (USA) it became known that DuPont, the ninth largest US corporation, had been listed in the USA as the worst environmental offender among 8 leading chemical companies for the decade of the 1970s.⁸⁰ It took years of information gathering and public action to force DuPont to acknowledge some of the problems.⁸¹ The participation of Anil Desai, a local born cancer specialist living in London was crucial in bringing into the open the health hazards to be expected.

Another crucial concern which worried the people and their representatives in the affected panchayats was the claim on water resources, as the required 2,50,000 litres of water per day would drastically lower the water tables and make agriculture impossible.

People soon realised that their livelihood and local culture, along with health and environment, were under threat. And they acted.

The pattern of action – which was finally successful – consisted of a combination of public meetings, demonstrations and direct actions with the decision-making processes in the affected panchayats. In Oct. 1994 all five panchayats voted to reject the proposed factory, in spite of the lure of jobs. Villagers demanded access to cremation grounds which was blocked by a TDC wall. As if the memory of their ancestors inspired them, they demolished the wall, torched the guard-shed and damaged construction equipment. The govt. responded with arrests under TADA, which the court however disallowed. The tension between police, TDC security guards and villagers increased. Villagers boycotted people associated with the TDC, refusing to sell food to them. The problem became an issue in the court as well as in the Goan legislative assembly. Tensions on the roads increased after arrests and mishandling by the police. The traumatic culmination happened when villagers on 23rd Jan. 1995, blocked a bus with American experts and three police jeeps, and the police – without warning – opened fire. A 25-year-old man, Nilesh Naik was killed. The next day people took over in spite of section 144, and they attacked and damaged the TDC office. The cremation took place on the deserted factory premises now reoccupied by the people. It was attended by thousands of Goans, honouring Naik as a martyr of the Goan environmental movement.

This story of people rejecting a mega project in defense of their livelihood, culture and environment shows that under certain circumstances people can move into the direction of an alternative development model. For the mobilisation it was crucial that the movement was able to build up co-operation across social and cultural divides. For example, both the Catholic church and the local BJP supported the anti-Thapar campaign. Of particular significance was the use of the Panchayati Raj, defending people's control over resources against a transnational company.

After its defeat in Goa and refusal in Karnataka, the TDC was however welcomed by the AIADMK govt. in Chennai.

3. b. *Mega-Watts vs People: The Enron Story*

The US-based TNC Enron was one of the first to respond to the liberalisation in India's energy policy which allowed for 'fast-track' power projects with foreign private capital. It proposed in 1992 a gigantic power plant on the Konkan coast in Maharashtra which would be fired by LNG (Liquefied Natural Gas) imported from Qatar in the Gulf. Together with two other US-based TNCs, Bechtel and General Electric, Enron formed the Dabhol Power Company. It received clearance from the GOI and entered into a power purchase agreement with the Maharashtra State Electricity Board in Dec. 1993.⁸² With a total installed capacity of 695 MW in Phase I and another 1320 MW in Phase II, the project was estimated to cost Rs 90.5 bn or about \$1.4 mn per MW. This biggest power plant of India would be located near the port of Dabhol, on the other side of the estuary formed by the river Vashiskti, in a very fertile area covered by forests and orchards. Three villages would have to give up around 700 hectares of land.

The project met with strong objections from a wide range of interests and organisations. The technical and economic objections mainly focused on the gigantic scale and high costs of the project, its heavy outflow of foreign exchange and the high charges for electricity. Political critiques focused on non-transparency and secrecy in the preparation of the deal, which invited accusations of corruption. Social and environmental critics raised objections against the destruction of the livelihoods of people and a fragile eco-system.

Environmental organisations, consumer organisations, labor unions, cultural organisations, political organisations and lawyers and researchers with differing interests formed coalitions for common action. Migrants from the threatened villages set up a Committee for the Rights of the People in Mumbai. Locally, villagers formed vigilance committees. Trade unions formed the MSEB Workers' Federation, which joined with others in a joint front called Enron Virodhi Sangharsh Samiti (EVSS). Local people resisted land acquisition in spite of brutal police repression.

The opposition parties BJP and Shiv Sena responded to the strength of the 1994 protests by promising in their election campaign to "throw

the project in the Arabian Sea" if voted into power. Their new coalition govt. (March 1995) announced a review of the Enron deal which led to its cancellation. However, internal differences and tremendous pressures from the pro-Enron lobbies, ranging from the GOI, the media, academics and bureaucrats, to the govts. of the USA and the UK and the World Bank, resulted in a renegotiated deal by the end of the year.⁸³ This called the bluff of the commitment of the BJP to "swadeshi".

Why this surrender? Why do Bill Thackeray and Pawar (who made the initial deal) and the BJP finally pursue the same sell-out policy? Handsome bribes may play a role, or at least the expectation of the flow of big money. But that does not explain everything. Why did they all agree, in spite of serious economic and environmental objections, to allow such a huge project to be located in a non-industrial area, 300 km. south of Mumbai? It is because they are pulled and pushed by the same old, worn-out, obsolete, yet still accepted vision of modernisation and economic growth through industrialisation. The Enron plant is meant to be the magnet which attracts, with its abundant supply of power, new industries to the "backward" rural district of Ratnagiri. This area is relatively under-polluted as compared to the region around Mumbai where air, water and soil are so polluted that further industrialisation cannot be absorbed anymore. The Govt. of Maharashtra aims at an investment of Rs 600 bn in industries in the Konkan.

The advocates of such a "development" as usual argue that this is going to create jobs. But local people look at it differently. They see in it a threat to their livelihood, which is based on horticulture, forest and marine products, and agriculture. In their protests people have criticised a policy which only treats land-owning families as affected inhabitants entitled to compensation. They explain that all of them depend on common property resources for food, fuel, fodder, fertiliser, fibre, fish, domestic use of water, answering the call of nature, and cremation grounds. Fishing families see a threat in the use of the estuary by large tankers and for the discharge of effluents and hot water – 60 mn litres per hour.. Above all, people don't want to be uprooted from their local communities with their cultural coherence, and live in a social and ecological wasteland. Ecologists add that this project would transform a lush-green forest reserve into a deforested

reserve, with trees chopped down, humans and wildlife displaced, and water and air polluted.⁸⁴

People did not take the turnabout of the govt. lying low. A new action committee was formed at the local level with the help of the EVSS. The NAPM rallied support from all over the country. A massive Ishara (warning) Satyagraha took place on Martyr's Day, 30th January 1997. In spite of police terror, supervised by officials from a helicopter provided by Enron, about 10,000 protesters gathered. More than 1200 were arrested. On a later occasion villagers forced their entry into the pump house and discontinued the water supply to Enron from their own source of water, highlighting that people's control over resources is one of the basic issues. A fact-finding team observed that the administration forcibly made land and water resources available to the company in violation of the rights of the local people, in particular their right to livelihood and the right to form associations and protest.⁸⁵

While people were facing the police and its violent brutality, other battles were going on in the courts.⁸⁶ A BJP activist, various organisations and the CITU successively filed suits. All these attempts however failed, because the courts did not go into the merits of the case and gave only technical reasons for dismissing the suits. Even the Supreme Court (SC) refused to scrutinise the fairness of the contract. Praful Bidwai rightly asks why the SC, which considered the fairness of the allotment of petrol pump dealerships, does not go into the fairness of India's largest commercial contract worth \$30-35 bn. "The message? Business is sacrosanct and cannot be subjected to legal scrutiny." "By signing a contract that is immune to scrutiny by the Indian legal system and yet binding on the sovereign Govt. of India and the Maharashtra Govt., Enron has totally bypassed, indeed sabotaged, all accountability."⁸⁷ Bidwai concludes with an appeal to the judiciary to revise its approach.

A similar battle against ecologically destructive industrialisation has been fought in the Dakshin region of Karnataka. A broad coalition of farmers, fishermen, and environmentalists, led by the fishing community, opposed the Cogentrix power plant and the project of an effluent pipeline by the Mangalore Refinery and Petrochemicals Ltd. In this case it was the Janata Dal State Govt. headed by Deve Gowda

which pushed for industrialisation irrespective of the damage to agriculture, fisheries and people's livelihood. In this case also the Supreme Court ignored reports which advised against the projects and gave the signal for going ahead on the path of destruction.⁸⁸

In these cases the people lost. Yet the battles have not been fully in vain. A proposal of Enron in a tie-up with KPP Nambiar to set up the Kannur Power Project in Kerala was rejected by the Kerala Govt., following protests which referred to the experience with Enron in Maharashtra.⁸⁹

4. Unmasking the Manipulators and Terminators of Life

The use of language (the choice of names and terms) is a major part of the struggle against the giant corporations which strive to control life in order to dominate the global market. The US-based TNC Monsanto has been involved in the chemical business, in particular pesticides and herbicides which kill pests and herbs and other forms of life in the process. It has now expanded into the seed business and projects itself as spreading the blessings of "life sciences" with its slogan "Food, Health, Hope". It has acquired the company Delta and Pine Land, the holder of a patent on what was called a "Technical Protection System" (TPS) which had been developed in co-operation with the US Department of Agriculture. Behind this designation was hidden what became known worldwide as "terminator" seeds. We owe this successful unmasking, by the use of an appropriate term, to Pat Mooney of the RAFI (Rural Advancement Foundation International) and the critical network which spreads the use of this name worldwide.⁹⁰ This name has greatly helped to alert people and the press to the dangers of genetic engineering in the pursuit of profit.

A movement against Monsanto was announced in July 1998 at the St. Louis Headquarters of Monsanto. In India a broad alliance of women, farmers, consumers, scientists and ecologists launched the "Monsanto, Quit India" campaign on Aug. 9, 1998. As news spread about Monsanto's field trials, farmers took action, though according to Monsanto no terminator technology was as yet involved. The Andhra Pradesh Ryot Sangha, a federation of Left oriented associations led the uprooting of Monsanto's Bt. Cotton. The high-tech. oriented A.P. govt. found itself under pressure to declare a ban

on trials. In Karnataka the KRRS adopted militant measures which led to some controversies. In Tamilnadu the minister of agriculture declared that the entry of terminator seeds was forbidden.⁹¹ There are clear indications that there is a growing concern among farmers about losing control over their seeds and about the dangers of the latest technology. It will be important to expand this movement and avoid making Monsanto and terminator seeds the only focus. Monsanto may be bought tomorrow or divided, and the terminator seeds may get a new name, but the efforts to establish control over the seeds of life will continue and will have to be blocked.

The struggle requires a serious public debate with scientists and policy-makers about the implications of biotechnology. Many of them seem to think that only the "terminator" technology – which has not yet been introduced – is problematic, whereas Monsanto's Bolgard cotton, which is supposed to provide resistance to the American bollworm, is beneficial and did not deserve the attacks of the farmers. Monsanto co-operates with the Indian Institute of Science in Bangalore and the Indian Seed Company Mahyco. It has the permission of the Department of Biotechnology of the Central Govt. for field trials of various crops. The supporters argue that biotech can help to increase production and reduce the use of pesticides. Their confidence is based on the feeling that "what is good for the US is good enough for us".⁹²

However, news from all over the world about campaigns against Monsanto in particular and against genetic engineering in general show that the "terminator" technology represents and reveals an approach to nature and life which also makes other forms of bioengineering highly questionable. Even those who have no fundamental doubts about our freedom to manipulate nature in this way, have reasons to doubt the wisdom of going ahead with the commercialisation of GMOs. The marketing manager of Monsanto in South Asia may claim that the Bolgard Cotton has a proven capacity to increase yields by 20-25%, but his company is facing lawsuits in the US from cotton-growers whose crops failed in 1996 and 1997.⁹³

Similarly the promises and projections regarding the miracles biotech can perform are increasingly being undermined by disappointing results.⁹⁴ The 'superpig' engineered with human growth hormone

genes “turned out arthritic, ulcerous, blind and impotent”. An engineered ‘supersalmon’ “ended up with big monstrous heads and died from not being able to see, breathe or feed properly”. The “latest clones of the transgenic sheep Dolly are abnormal and eight times as likely to die at birth compared with ordinary lambs”.

There is a growing conflict between consumers who want safe food and the right to know (through labels) what they buy and eat, and corporate producers who want no restrictions on their ‘right’ to market genetically modified products in which they have invested so much. Scientists are caught in between: they are employed in labs sponsored by TNCs and in institutes which can inform policy-makers and the public about possible dangers. The following story illustrates the conflict.

Dr. Arpad Pusztai went public with a research report saying that transgenic potatoes had damaged vital organs of rats in an unexpected way, and had weakened their immune system. Within days his contract with the Rowett Research Institute in Aberdeen was ended.⁹⁵ Scientists from other countries have come out in support of his findings and warnings.⁹⁶ The public in UK demands the labelling of GM products, so that they have the choice of refusing to buy such food articles. Under pressure the UK environment minister assured the public that Britain would not allow the commercial growing of GM crops “until the Govt. was convinced it did not damage the environment and wildlife”.⁹⁷ Continuous pressure is required on such wavering govts. which tend to do the bidding of big business. But there are hopeful signs that consumers are waking up to the dangers of a global free market.

Many countries and movements had hoped that the Extraordinary Meeting of the Conference of Parties to the UN Convention on Biological Diversity held in Cartagena (Columbia) in Feb. 1999, would finalise the International Biosafety Protocol which had been prepared during three years of difficult negotiations. But these hopes were dashed when the US, followed by Canada, Australia, Argentina, Chile and Uruguay crippled the concluding negotiations.⁹⁸ Developing countries had insisted that all GMOs (i.e. seeds, plants, fish and micro-organisms) should be included whether they are meant for cultivation

or for consumption. But the US insisted on excluding agricultural commodities such as wheat and maize. The meeting shows the growing concern in the developing countries that they did not compromise, as the EU suggested. The logical conclusion would be that these countries go ahead with strong national or regional laws to curb the risky free trade which the US tries to impose, as long as no Safety Protocol is accepted. NGOs have resolved to respond with campaigns for national, regional and global moratoria or even bans on GMO releases.

C. BASIC ISSUES EMERGING

Our survey of struggles over resources and against hazardous industries has not been exhaustive, but I hope it is sufficiently representative. However, there are important eco-issues which are not yet sufficiently raised by people's movements. Environmental destruction and waste of energy due to militarisation need to be put on the agenda. Hopefully the growing peace movement will do that. Car factories and road-construction projects are proliferating without, as yet, provoking massive public protests. The same applies to the promotion of transport by air rather than by railroad and waterways. Such issues will have to be included while discussing the basic themes emerging from the agendas of people's movements. In western countries protests against the car culture and for 'reclaiming the streets' are slowly spreading. The issues selected here do not cover all the emerging questions, but focus on the connections with economic processes and policies. The underlying ideological questions will be discussed in the next chapter.

1. Energy Waste

Many struggles and debates confront us with basic questions regarding energy use and energy policies. If people oppose big dams, nuclear plants and other power plants like Enron and Cogentrix, what does it imply for the supply of energy which is needed for domestic purposes, agriculture and industry? The opposition may be primarily on local grounds: people don't want to lose land or forest or water resources and they may fear pollution. But who can deny that the nation needs more energy for development? Many people still don't have electric lighting. Should that remain so for ever? India's per

capita energy consumption (PCEC) is far too low, say the development experts. Its increase will be the motor of development, and therefore we should not oppose big dams and nuclear plants.

This line of argument which still convinces most people has to be broken up. We require development, but it should be need-oriented, environmentally sound and self-reliant. Proper energy services which increase the quality of life should reach all, including the poor on a priority basis. This can be achieved without big dams and nuclear plants if we tackle the waste on which the present system is based.

a. Huge amounts of energy are wasted on unnecessary purposes. If we pursue an active policy of peaceful relationship with our neighbours, enormous savings can be made in the expenditure of energy spent to maintain the military establishment. And how much energy is wastefully spent on the glitter of consumerism? As Sunderlal Bahuguna asked, why should the risky Tehri dam be built to illuminate the shopping centres and skyscrapers of Delhi? And whose quality of life is improved by mega projects of new airports and the like? And how many more suffer from them? Many more such questions should be asked in order to foster a public discussion on our priorities, whom they serve and at which cost for common people and the environment.

b. Energy for useful, beneficial purposes is spent in a wasteful way. This is the main argument of Amulya K.N. Reddy of the International Energy Initiative in Bangalore.⁹⁹ He dismantles the PCEC-based argument for development by pointing out that what matters is not energy in terms of KW hours but energy-services which perform useful tasks and satisfy human needs. If those services can be supplied to all with less energy, everybody should be happy (except the big companies, it may be added). Energy-services, he argues on the basis of many years of study and work on alternative energy supply systems, can be increased without increasing the energy supply, with the help of improved, appropriate technologies for the design of end-use devices such as stoves, lamps, motors, etc. Further savings can be made by decentralised technologies based on renewable resources of energy. All this opens a wide field for scientific research and technological innovation which would really contribute to viable development, unlike the mega projects which swallow astronomic sums

and destroy nature. A.K.N. Reddy provides a role model for an alternative professional career oriented towards people's needs. He narrates how he was shocked long ago to hear the economist C.T. Kurien saying that the present pattern of development did not remove poverty but contributed to it. Having convinced himself in a painful re-thinking process that this was indeed the case, he devoted his work as a scientist to finding alternatives.¹⁰⁰

c. The most difficult thing to imagine seems to be the proposition that it is time to slow down. Our system is geared towards speeding up, from faster bikes and cars and all sorts of machines to faster computers. We are devotees of the god of speed. Believing that time is money, we assume that going slow is a waste of time and money. We pay an exorbitant price in terms of wasted energy and polluting waste in order to be fast.

Ecological economists Georgescu-Roegen and Martinez-Alier have emphasised the need to become more realistic and to accept the implications of the law of entropy which says that we cannot create new energy and that any use of energy transforms part of it into non-usable waste.¹⁰¹ In other words, the earth is ageing, and therefore it is time to slow down the use of its limited resources rather than speeding it up. Any elderly person would agree that at least for human beings that would be the natural, sensible thing to do. The advantage of slowing down is, moreover, that it will bring down the heaps of waste which are piling up, and reduce the deadly dangers of pollution which are threatening the quality of life.

If we start moving away, as much as possible, from fossil fuels, and turn to renewable sources of energy such as biomass, solar and wind power, further reductions of pollution and other damage to the environment can be achieved. In short, the ageing earth and humanity can get a new lease of life, if we reorient our ways of using energy. Don't say that it is utopian. What is "utopian" in the sense of "impossible", is the blind assumption that we can just speed up in the same way as before. That is the highway to eco-disasters. The only realistic thing is to reorient ourselves when there is still time. What is needed is a drastic reduction in the use of fossil fuels, a shift to sources of renewable energy, and a just redistribution of both among the global

population. Just redistribution is crucial. It requires a reversed structural adjustment: the rich, those in the fast lane will have to adjust to the poor, to those who are left behind and on the roadside by present development policies.

Bob Goudzwaard, another ecological economist, has used the image of the tunnel. We are told to move on the fast line into a tunnel and to speed up not to obstruct the traffic. But who knows whether there is an exit at the end of the tunnel of murderous global competition? Maybe the slow ones, the last ones who do not make it in the present world economy, who hang on to some subsistence farming and pottering, are the first on the long road to a new, viable economy. They won't need to climb down the staircases of the skyscrapers when the lifts come to a standstill and the computers collapse.

All this means moving towards a different type of civilisation: less production for faraway markets, less global transport, less private vehicles for mass transport, less chemicals in agriculture, less cement in construction, less plastic packaging, closing radiating nuclear plants, abandoning destructive dams, reviving rivers, revitalising rural agriculture and decentralised industries, and more local production for local markets.

2. Debt-Driven Destruction

The capitalist economy cannot slow down. A declining rate of growth may give some respite to the over-exploited nature¹⁰² but economists and politicians fear it as the indication of a possible economic crisis. This is the consequence of the fact that economic growth is driven by the compulsions of the credit system which creates money by lending it against interest.¹⁰³

This explains why the same govts. which more or less agreed at the Earth Summit in Rio de Janeiro in 1992 that something serious had to be done about the ecological crisis, were 2 years later signing the GATT treaty which was heralded as the way to doubling global trade and increasing global prosperity through free trade. Their environment ministers may know that global warming requires the reduction of emissions and thus a slowing down, but their finance and commerce ministers, with a look at the debt-service figures and the

foreign exchange account, press for chasing export dollars by increasing cash crops for export to faraway markets. Thus, they contribute to global warming and the diminishing of biodiversity – two of the dangers which Rio has highlighted and which are meant to be reduced by the conclusion of treaties on Climate Change and Biodiversity.

Many Third World countries were persuaded in the development decades of the 1960s and early 1970s to take loans to invest in mining, industries and chemical agriculture. Then they found in the late 1970s and 1980s that rising interest rates were increasing their debts to a socially and environmentally devastating height. Debt-servicing and repayment could not be done from the meagre profits in a time of falling prices. Many countries had therefore to turn to the sale of their natural resources. The logging of tropical rain forests in a locally and globally harmful way was driven by indebtedness. Another source of earning dollars in order to service debts was allowing the dumping of toxic waste and the transfer of dirty industries. In India we have the example of ship-breaking. Such practices of coping with debts at the cost of the environment were justified by the Vice-President of the World Bank Lawrence Summers: "Health-impairing pollution should be done in the country with the lowest cost, which will be the country with the lowest wages."¹⁰⁴

The same logic of debt-servicing and accumulation does not allow countries to go slow and to preserve their precious limited resources instead of exhausting them within a few generations. According to that logic it is a waste to leave the oil under the soil or the sea for future generations instead of pumping it up – increasing production – and selling it to be burned, so that money can grow in the bank.

3. Biased Science and Technology

Capitalist ideologues have succeeded in convincing a great number of people that capitalism is superior because it develops and uses the latest technologies based on the most sophisticated scientific research. And who dares to question science – the ultimate authority of the modern world – and appear backward, ignorant or even superstitious? However, the multiplication of eco-problems caused by modern technologies slowly undermines the confidence and unquestioning trust

in modern science and technology. The unsolvable problem of safe disposal of nuclear waste, the health problems caused by pesticides, polluted air, poisoned food and the side-effects of modern medical treatment, and the devastating consequences of global warming are creating doubts about the presuppositions of modern science and technology. Their achievements may be impressive, from space-rockets to genetic engineering, but in many cases some of the costs have been kept hidden or have been ignored. Harmful effects on health and the environment have often not been taken into consideration till the damage took massive forms, as in the case of air pollution and climate change, or became visible through catastrophes as in Chernobyl. Critics are warning us not to wait until genetic engineering leads to disasters, but to take time and all-round precautions in protected research laboratories instead of rushing into production for the market. They point out that science and technology are not so "neutral" or "objective" as they are claimed to be. Critical analysis reveals that they are rather biased, determined and shaped by procedures of abstraction and reduction which serve particular purposes and are not automatically useful to humankind as a whole.

The bias is inbuilt in the scientific experiment which is the ultimate criterion of reliable scientific "truth". The truth of a lab experiment is confirmed when it can be repeated anywhere else with the same result. The pre-requisite is that the conditions are exactly reproduced. To experiment the artificial environment of the laboratory is needed. In nature the conditions are never exactly the same. The lab experiment excludes the uncertainties of many interruptions and interactions, it creates a clean and controlled environment in which the behaviour of particular selected factors can be observed. Modern science proceeds with the help of such reductions of the complex reality, by isolating particular germs or atoms or genes.

At this point it becomes crucial to know who poses the questions for the research, since it is not the whole of reality which is going to be studied. Govts. at war may ask for research on how to release nuclear energy for the purpose of mass destruction, or on how to use germs for biological warfare, or chemicals for defoliating jungles. Pharmaceutical industries ask for certain drugs, agro-industries for pesticides or genetically modified seeds. Such questions tend to exclude

alternatives which are of no interest to those who want to win a war or make profits in the market. This means that the research and its applications will serve "partisan" interests and not people as a whole. Let us illustrate the point. Several years ago the German Embassy circulated a documentary film sponsored by German universities and pharmaceutical industries about the "last frontier of science". It informed about brain research and the development of drugs against mentally upsetting worries. A mouse was shown in a narrow cage, on its hindlegs, obviously worried. It was then killed and dissected to reveal black spots inside its body. The next mouse was put into the same cage, but treated with a particular chemical. It then calmed down and when dissected, was found to have no black spots. The next scene presented a terribly worried lady in a phone booth, trying to get some help. The wonder drug calms her down. The message is clear: the latest science has found ways to do away with your worries or at least with their symptoms. The beneficiary, if we fail to question the flaw, would be the pharmaceutical industry. The researchers were not asked to explore other ways of solving the problems of the mouse and the woman. The authority of the lab-paradigm is so great that many people, when asked, don't spontaneously suggest to open the cage, that very unnatural, artificial construction, or to find out from the woman what her worry was about rather than giving her a drug.

Modern agriculture offers plenty of illustrations of other aspects of a reductionist, biased approach. Industrialised farming is said to be more 'productive'. But this is true only if several factors are left out. A modern farmer requires about 10 calories of energy input to produce one calorie of food energy, whereas a traditional subsistence farmer can with the input of 1 calorie of renewable energy produce up to ten calories of food energy. But big business is not interested in exploring how non-industrialised farming can provide for increasing needs and food security. This would reduce the profits of oil, chemical and trading companies.

Or take the example of Ford's cars. They may be comfortable products of sophisticated technologies. But they make sense only if their number is restricted to taxis – as a supplement to public transport – and perhaps as a means of transport for special categories of people such as medical doctors. Generalised as a means of mass transport they are highly irrational. But Ford did not take this factor into

consideration because it did not suit its profit prospects. Nowadays, when the cities are clogged, Ford still advertises lonely cars in beautiful landscapes on empty roads.

4. Can Capitalism Solve the Eco-Crisis?¹⁰⁵

We have seen at many points that modern capitalism places unbearable burdens on the environment. Its mega projects like the dams in the Narmada valley, car culture, mechanisation and chemicalisation of industry, agriculture and even domestic life, destruction of subsistence production, promotion of global trade, consumerism and piling up of debts have created unprecedented ecological problems. The catastrophic consequences of its so much admired “dynamism” and “productivity” become more and more visible, at least for those who have eyes – and the will – to see. Insurance companies have started consulting Greenpeace and ecological scientists in order to calculate the mounting risks of the reckless drive for ‘growth’. But will they be able to persuade other companies to reduce the risks by going slow? Can capitalism reform itself in the face of the eco-crisis? And can it do so at the cost of the rich and not of the poor? Neo-liberal economists and eco-technocrats try to assure us that the market, science and technology can handle the problems. Don’t worry, they say. Once the market internalises the ecological costs by pricing them, producers will opt for cleaner technologies and eco-business will give us a new boom as well as a cleaner environment.

However, capitalism has so far grown at the cost of workers and nature. It has been feeding on outer colonies in the time of imperialism, and on the “inner colonies” of tribals and women as the ‘last colony’ in the era of ‘development’.¹⁰⁶ Now it is trying to base a new round of growth on the control of seeds and genes, subjugating the ‘production of life’ to its logic of accumulation. Ideologically, it is trying to impose at least its language and logic on all aspects of life by treating factors which were not produced as commodities as if they are commodities. This for example happens when people talk of humans and nature as ‘human capital’ and ‘nature capital’. Martin O’Connor has called this a form of “semiotic conquest” which serves the purpose of making us all think in capitalist ways and terms.

Marxists have again and again built hopes on the crises capitalism was facing, expecting that they would lead to a revolution which would open the way to socialism. Capitalism has however shown a tremendous capacity to re-emerge from each destructive crisis with new strength. Perhaps even the new crisis due to eco-limits does not spell the final doom of capitalism. Maybe it can even preserve its economic system without further growth, with high percentages of unemployment and the marginalisation of masses of people and whole nations. But in that case it would have to turn to the most brutal forms of repression.

In order to avoid such a barbaric outcome it is important to create clarity in people's minds that the very logic of capital, the logic of accumulation cannot be reconciled with the logic of life. In this context, several questions should be considered.

1. Capitalism may be able to adjust to zero growth by sacrificing individual capitals. But can it do so, can it eliminate some capitals without sharpening the competition among all at the cost of labour and nature? If there is no more space for all companies to grow, will not the competitive struggle become more ruthless and without consideration for the ecological costs as long as one can get away with it?

2. Capital can adopt eco-technologies. Can it also adopt labor-intensive, small-scale eco-technologies which don't require huge loans and therefore won't contribute much if at all to the accumulation process? Can it make space on a large scale for such alternative production methods? Can finance capital live and grow with such a reorientation?

3. Assuming the possible growth of individual capitals/companies within the limits of overall zero growth, would this be sufficient for the logic of natural growth processes? For instance, if restrictions are put on fishing in order to allow the reproduction of fish, will capital leave the catch to artisanal fisheries or will it divide it among the most "efficient" high-tech operators whose operations add to the accumulation process?

4. At present capitalism is devoted to the god of speed and the production of non-durable commodities which have to be replaced as

soon as possible, in order to promote the accumulation process. Can it opt out of this wasteful process, can it opt to go slow, producing less in a more durable manner? What if this means declining profits?

5. Can capitalism learn to measure progress in terms of less energy spent instead of more? Can this process be also based on a shift from centralised non-renewable energy supply run by giant power-corporations to decentralised, people-controlled, renewable energy supply run by panchayats or municipalities?¹⁰⁷

6. Can capitalism adjust to a radical reorientation in food production and trade, from mechanised, chemicalised large-scale production for global markets, to decentralised, organic production for local markets? The shortening of the distance between land and mouth¹⁰⁸ would mean that food becomes healthier, but in terms of money-value added there would be losses for food-processing industries, food-preserving chemical producers, transport companies, oil companies and so on.

Many similar questions could be added to the list. Whatever adjustments capitalism may be able to make on one or the other point, these questions point to fundamental contradictions between the capitalist economy and ecology. Altvater has exposed five such contradictions.¹⁰⁹

A first contradiction exists between quantity and quality. The dynamic of the capitalist economy is a process of quantitative increase of values. Going beyond catering to household needs it aims at quantitative accumulation. In the ecological system on the other hand, we face a process of qualitative change. According to the first and second laws of thermo dynamics there are no quantitative changes in energy balances and material endowments. "The amount of energy remains the same but its quality deteriorates because it can be used less and less for the performance of work." Rather than the abundance which capitalism promises, the more materials and energy we transform in the process of production and consumption, the more economic and social scarcity we generate. Fortunately the earth is not a closed system, it can tap solar energy. But capitalist expansion, in pursuit of quantitative growth, undermines the ecological processes and reduces their quality and potential to satisfy human needs.

A *second contradiction* exists between time and space on the one hand, and timelessness and spacelessness on the other. Nature needs time and space to grow. But capitalism is in a permanent, never ending hurry to obliterate the differences of time and space. This hurry means that space is being consumed by airports, highways and the like. More and more things are being produced, transported around the globe and consumed in order to increase the turnover of capital. All this hurry exercises an ever increasing pressure on the earth with its limited resources.

Time is supposed to be money. The time-savers tell us not to waste time and never to stop. Once the investments have been made the machines have to run, preferably day and night, and seven days per week. Once the machines run and the products pour out of the factory, the consumers have to be persuaded to buy and replace old things by new ones, long before they have lost their utility. In the old days people would buy furniture, tools and other necessities to last for a life time. Today things are made not to last, so that we keep buying new things. In some places they even sell throwaway cameras. Companies take patents on inventions which give durability (e.g. to bulbs) in order to prevent them being made available. Things should be "consumed" as quickly as possible.

A *third contradiction* exists between the reversibility or circularity of capital accumulation and the irreversibility of material processes. Capital which is invested has to go through an expansive circulation process in order to return with gains. Credits have to be paid back with interests. The compulsion to make a surplus is inescapable. If the circular flow is interrupted, profit is not being made, interest is not being paid and there is an economic crisis.

In nature on the other hand, flows are irreversible. The natural direction of the conversion of energy and materials is a decline in quality. This can be slowed down through caring for durability, maintenance and recycling, and it can be compensated by the use of renewable energy. But that does not take away the basic contradiction with the compulsions of capital accumulation.

A *fourth contradiction* exists between the rate of economic growth and the rate of entropy. High rates of profit usually imply a

high throughput of materials and energy. In an economy based on the use of non-renewable resources, this means the rate of entropy increases. In times of economic crisis you can notice a decline of pollution.

A fifth contradiction exists between capitalist rationality and ecological rationality. Capitalist rationality is measured by the profit rate. What matters most is the rate of profit in the balance sheet, whatever the unpaid social and ecological costs. On the other hand, natural processes require not an exponential growth but the maintenance of the “dynamic equilibrium between entropy intake and entropy discharge, between the Earth as a global system and the universe as an environment”.¹¹⁰

Altvater concludes that it would be naive to expect the solution of ecological problems from the capitalist mode of production. Instead we may rather expect a sharpening of the conflicts at all levels as capitalism tries to maintain itself.

These reflections lead to the conclusion that in the search for eco-justice we have to go beyond the present capitalist system. Nobody has a detailed blueprint, but in the various movements which have been discussed we find basic elements of a new vision and perspective which attract each other and find alliances. Such red-green-feminist-caste free combinations don't yet have a fixed name. Some may call it eco-socialism, others social ecology. Other names may also be proposed. In the next chapter we will try to provide some orientation regarding the different ideological tendencies and processes among the eco-movements.

CHAPTER IV

CONFLICTING IDEOLOGIES

A. BASIC TRENDS

The eco-crisis is so serious that nobody can fully ignore it any more. Govts. set up ministries for the environment, car producers advertise that they care for a clean and green environment and consumers start blaming pollution for their health problems. These are signs of a growing awareness that something is wrong. Unfortunately, that does not mean that rulers, producers and consumers are really ready to change their ways and patterns of behaviour. Politicians still believe in maximum economic growth, producers still obey the laws of accumulation, farmers continue to spray pesticides, and well-to-do participants of eco-workshops including globe-trotting NGO figures continue to travel by car and plane and to meet in air-conditioned rooms. Yet, there is also a growing awareness that some practical steps have to be taken. Govts. ban some harmful products and practices. Companies introduce some cleaner technologies and citizens stop some harmful habits. Of course, these are positive signals, but they can easily lead to a deceptive conclusion that such steps are sufficient.

1. "Deep Ecology"

Certain ecological thinkers and activists have challenged such half-hearted and piecemeal "reforms" of individual lifestyles and economic policies as "shallow". They have articulated a more radical approach which has become known as "Deep Ecology". The Norwegian philosopher Arne Naess coined this terminology in the early 70s¹ and it has evolved into an ideology which guides many eco-activists, especially in North America.²

According to Naess this basic position is marked by the "eight points of deep ecology":

1. The well-being and flourishing of human and non-human life on earth have a value in themselves, independently of their usefulness for human purposes.
2. Richness and diversity of life-forms are also values in themselves.
3. Humans have no right to reduce this richness and diversity except to satisfy vital needs.
4. The flourishing of human life is compatible with a smaller human population. The flourishing of non-human life also requires a smaller human population.
5. The present human interference with the non-human world is excessive.
6. Policies must therefore be basically changed.
7. Appreciating life quality (dwelling in situations of inherent value) has to replace adhering to ever higher standards of living.
8. Those who subscribe to these points have an obligation to try to implement them.³

The basic intention of the deep ecologists is to identify the deeper roots of the eco-crisis and to address them through a transformation of the relationship between humans and nature.⁴ They find the deeper roots in the cultural values which legitimise the domination of nature by humans. According to these values human beings are considered to be of higher value than other forms of life and entitled to conquer and manage nature in order to serve their needs. In the process, humans are getting alienated from nature on which they ultimately depend. This dominant view is characterised and criticised as “anthropocentrism”, placing humans on the top and in the centre of things. Because of its destructive impact hierarchical anthropocentrism has to be replaced by “biocentrism” or biocentric egalitarianism. Only that will save life on the planet. A bio or life-centered approach has to acknowledge the intrinsic value of biological diversity, independently of its usefulness for humans, while considering all forms of life of equal value. Connected with this affirmation is the ecological understanding of the inter-connectedness of all life as the opposite of

the dualistic and atomistic conceptions of the physical world which have guided modern science and technology.

Some deep ecologists have connected their critique of anthropocentrism with a critique of the Judaeo-Christian religious tradition and its anthropocentrism. Eastern religions and philosophies, especially Buddhism and Taoism are explored and considered to have a great affinity with an eco-centric world-view.

Within the deep ecology movement different tendencies have evolved. The "Earth First" movement in the USA represents a form of radical biocentrism, which reverses the subjugation of nature under humans by demanding the subjugation of humans under nature. Resembling the misanthropic proposals of Malthus and Malthusianism, some of them accept AIDS and famine as nature's response to population pressure.⁵ This is reminiscent of the protagonists of a "life-boat" ethics, who say that there is no place for all humans in the life-boat, if we want life on the planet to survive.

The anti-human implications of this sort of biocentrism has contributed to the development of a soft form of biocentrism which is willing to pay attention to social and political issues, and tries to make connections with eco-feminism and eco-movements in the Third World.⁶

A significant contribution to a rethinking of development has emerged in "bioregionalism" which has linked deep ecology motives with the idea of alternative, self-sufficient development on the basis of bioregional communities. In the course of time some bioregionalists have accepted the necessity of involvement in global issues such as climate change and have interacted with movements against GATT, TNCs, etc. They were part of the NGOs which were active around the UNCED in 1992.

Yet another tendency within deep ecology is connected with the Gaia hypothesis formulated by James Lovelock and Lynn Margulis.⁷ Lovelock has studied the atmospheric conditions of life in the Mars project of NASA. He concluded from the computer simulations that life on earth has produced itself and maintains itself in a constant disequilibrium. "Gaia", the name of the Goddess of the Earth in Greek mythology, stands for the organic, self-regulating whole of the earth.

Edward Goldsmith, editor of *The Ecologist*, has focused on technobureaucratic and industrial development as a threat to this self-regulating organic whole. He concludes that a much more radical reorientation of development has to take place than what is going on at present in the name of "sustainable development".⁸

Some of the main ideas of deep ecology have been rightly questioned by various other eco-thinkers and movements. However, before presenting critical comments, it has to be acknowledged that the challenge to 'shallow' environmental reformism is well taken. The deep ecologists are right in saying that some patch up here and there will not do. The depth and global scope of the eco-crisis confronts us with fundamental questions. What made humankind take this disastrous course and think that it is the path of ever increasing happiness, wealth and abundance? What made humans feel free to take from nature without respecting any limits and to dump all sorts of poisonous waste back into nature without considering the consequences? How could they be so blind with all their science not to anticipate the gigantic problems which are now staring us in the face? Such valid questions have led to scrutinise the basic assumptions of modern science and world-views which have guided western civilisation. They point to the need to re-think and transform our relationship with nature in a fundamental way.

Yet, the way in which deep ecology goes about the re-thinking and re-orientation process is not viable and deserves to be criticised. Social ecologists, eco-justice movements and eco-socialist thinkers have presented such a critique while proposing an alternative approach. This critique will be spelled out later.

Deep ecologists tend to consider themselves as the most radical environmentalists, the vanguard which shows the way to others who may have ecological concerns but are not yet very consistent and clear. This vanguard pretension has been effectively dismantled by Ramachandra Guha.⁹ He shows that deep ecology is a typical North-American movement whose ideas cannot easily be transplanted and applied in other contexts. North America has vast expanses of wilderness which they want to protect or eventually restore. Such conditions don't exist in India where the establishment of wildlife parks

has led to painful conflicts with Adivasis and gross injustices to them. In America this conflict was violently 'solved' long ago at the time of the conquest by white settlers who decimated the indigenous peoples who were living in what the conquerors considered to be "empty" wilderness. Now affluent nature-lovers want to enjoy 'unspoiled' nature, driving in their cars for hundreds of miles to visit the 'wilderness' during their holiday outings. Deep-ecology thinkers have elevated this desire of consumerist society to the level of an ecological world-view by projecting 'wilderness' as the original state of harmony with nature, before it was spoiled by agriculture, followed by industrialism. Idealising primitive society, they call for a return to it. Guha quotes the Native American thinker Vine Deloria Jr. who puts it thus: "The white man must drop his dollar-chasing civilisation and return to a simple, tribal, game-hunting, berry-hunting life if he is to survive. He must quickly adopt... the ancient Indian worldview to survive."¹⁰

Practically, these wilderness-thinkers want to cordon off parts of the globe from humans and sometimes advocate a drastic reduction of human population. They equate the protection of the environment with the protection of the wilderness. This tends to provide justifications for a new imperialism of nature-lovers and biologists, promoted by the World Wildlife Fund and similar organisations.¹¹

In contrast to this type of environmentalism, eco-movements in India are predominantly concerned with questions on how the balance between humans and nature can be restored and maintained in an agricultural setting, or – in the case of forests – how forests can be protected together with the human communities living in them. Guha and Martinez-Alier classify this tendency as "agrarianism" in distinction to "wilderness thinking" and "scientific industrialism".

There is a strong tendency among deep ecologists to transcend their North-American limits and to undergird their claim to be the vanguard of a new world-view by looking for support in 'eastern' spiritual traditions and thus to "present deep ecology as a universalistic philosophy". Guha rightly remarks that this new version of 'orientalism' does not do justice to the variety, characteristics and contexts of the cultural and religious traditions in the East. It ignores the crucial role

of agriculture in shaping human relations to nature in the societies in which Taoism and Buddhism blossomed.¹² The attempt to claim Gandhi for a deep-ecology gallery of saints is a striking example of a mistaken and unjustified appropriation. This will become clear from a discussion of Gandhian motives in Indian environmentalism.

2. Gandhian Motives¹³

Gandhian influences are clearly discernible in India's environmental movements. Chandi Prasad Bhatt and Sunderlal Bahuguna of Chipko, Baba Amte and Medha Patkar of Narmada Bachao Andolan, and others have acknowledged their debt to Gandhi. The critique of modern mega projects and heavy industrialisation, the focus on people's decentralised management of resources, and the use of non-violent methods of protest are among the indicators of Gandhian motives.

However, neither Gandhi nor his present-day followers in Indian environmental movements qualify as deep ecologists. Gandhi has severely criticised modern western culture and economy. But he has not based this critique on an eco-centric or a more or less mystical view of the relationship of humans with nature. Guha does not find any reference to that in *Hind Swaraj* or in later remarks which have a bearing on ecological questions. Gandhi's very anthropocentrist concern lies with the ethics of social and economic relations. He identifies human greed as the root-cause of exploitation by imperialism and industrialism, which leads to the depletion of resources. He does not advocate the preservation of wilderness but the revitalisation of a village-centered economy which avoids living at the cost of others. If India would follow the model of the West and take to similar economic exploitation, he remarked, "it would strip the world bare like locusts".¹⁴ This means that environmental degradation can be avoided only by opting against the unlimited multiplication of wants and the global chase for resources and means to satisfy them. He considers modern civilisation with its "mad desire to destroy distance and time, increase animal appetites and go to the ends of the earth in search of their satisfaction" as "satanic".¹⁵

These wants have to be strictly regulated, he says, as in ancient civilisations. He would agree with the deep ecologist Vine Deloria – quoted above – that we must drop the "dollar-chasing civilisation"

and “return to a simple... life”. But he would not at all equate that with a “game-hunting, berry-hunting life”. His ecological vision is not focused on a pre-agrarian or post-modern wilderness, but on a non-violent agrarian economy which would take care of the basic human needs through a careful, non-destructive householding of the resources. The Gandhian economist J.C. Kumarappa has systematically worked this out in his writings on villageism or the “economy of permanence”.¹⁶ His ideas have percolated in various ways and reached thinkers like Ivan Ilich and E.F. Schumacher.¹⁷

Gandhi’s famous sentence that “the world has enough for everybody’s need, but not enough for everybody’s greed” sums up his environmental philosophy and ethic. For him the issue is not to move from anthropocentrism to biocentrism or eco-centrism, but from a greed-driven economy to a need-oriented economy. And his “eastern” spirituality directly links God to basic human needs when he says that God appears to the poor in the form of bread. Gandhi and his followers today in the Narmada valley or at the Tehri dam leave it to the upper-class city dwellers to care for the wilderness. Their environmentalism is a form of “agrarianism” as Guha and Martinez-Alier have called it.¹⁸

Kumarappa found the possibility for a balanced relationship between humans and nature in agricultural civilisations, whereas for him industrialisation is impossible without predation. In agriculture the interference with nature is kept within limits, as it is a matter of aiding nature or intensifying its processes. He has no inhibition to speak of agriculture as the “greatest among occupations”, in which “man attempts to control nature and his own environment in such a way as to produce the best results”.¹⁹ This contrasts with the violent interventions of large-scale industry. Obviously Gandhi and Kumarappa would abhor the industrialisation and chemicalisation of agriculture and the interventions of genetic manipulation, which have turned modern agriculture into an environmentally destructive occupation.

Gandhi’s early intuitive warnings about destructive consequences turned out to be far-sighted. Thus it does not surprise that Gandhian motives play a considerable role in the environmental movement. However, Gandhism as a fixed doctrine has its limits in confronting

the present eco-crisis in all its dimensions. Firstly, its idealisation of the village economy tends to overlook the deep social divisions of patriarchy, caste and class which deeply affect the rural economy and society and deny women, Dalits, Adivasis and the resourceless poor access to the resources needed for a decent livelihood within the rural economy. Many of them are forced to migrate to urban/industrial areas, mines and construction sites. There they tend to disappear beyond the horizon of the Gandhian vision. That is a second limitation. The very critique of industrialism requires a vision of societal transformation including the urban/industrial economy, which Gandhism fails to offer. Social ecologists have addressed the first issue of social divisions, and eco-marxists are trying to address the second issue.

3. Social Ecology

Murray Bookchin,²⁰ a founder-figure of social ecology, narrates how a Green activist from California shocked him by blaming human beings as a species for the ecological crisis, and refused to distinguish between blacks, women and other oppressed groups and corporations, agribusiness, ruling elites and the state. The activist insisted: "Everyone! They over-populate the earth, they pollute the planet, they devour its resources, they are greedy. That's why corporations exist – to give people the things they want."²¹ Bookchin comments that by blaming a mythic 'humanity' as a species, the social roots of the crisis are being obscured. "Reduced to a mere species, human beings can now be treated as a simple zoological phenomenon subject to the 'biological laws' that presumably determine the 'struggle for existence' in the natural world." Famines, wars and hunger can then be taken as 'natural checks' to restore the balance of nature. If viewed in the biocentric way all life-forms are of equal value, people can become interchangeable with locusts or viruses.²² This leads to Malthusian conclusions. Reduced to one life-form among many, the poor may be considered as expendable and doomed to perish. In that way, "oneness of life" and "biocentric democracy" become pious formulas for human oppression and even extermination.

Against such an approach Bookchin argues in favour of social ecology which is rooted in a social critique of society and a vision of social reconstruction "that will benefit nature and humanity".²³ In his

analysis the domination of nature is intimately linked with the hierarchical structures of domination in society which subjugate people. This includes a critique of the hierarchical construction of gender relations and thus allows for connections with feminist projects.²⁴ Social ecologists moreover approach the relation of society and nature in the perspective of a co-evolutionary process in which both are guided by the same basic principle: in humanity nature becomes conscious of itself. John Clark speaks of social ecology as "the awakening earth community reflecting on itself".²⁵ Like deep ecologists, social ecologists strongly criticise the mechanistic view of nature as a passive object in modern science and the alienation of humans from nature which is inherent in the understanding of human freedom as being based on domination over nature. Bookchin sees nature in terms of ongoing, mutually inter-dependent processes towards the emergence of new levels of complexity and diversity. The aim of this evolution is understood as ever increasing diversification and creative integration. Unlike the deep ecologists Bookchin sees nature in this evolutionary process as the realm of freedom in the sense of self-determination. From atoms to living organisms and finally to persons, societies and eco-systems there is a tendency towards self-organising and self-stabilising.²⁶

That is why for Bookchin nature and society are not conflicting opposites as in modern capitalism. An ecological society modelled on freedom, mutualism and unity in diversity can reconcile humanity with nature, as these are the key organising principles in nature. Like soft deep ecologists social ecologists favour decentralisation, participatory democracy in communities, and corresponding, appropriate technologies. But Bookchin – unlike deep ecology – at the same time emphatically affirms the modern ideals of human emancipation as articulated by the Enlightenment, and vehemently opposes the denigration of reason, science and technology, and commitment to humanity as a whole, which he finds in certain forms of deep ecology and eco-feminism. The abuse and betrayal of these ideals by industrial capitalism do not justify their abandonment by ecologists. Instead they should be revived around the issues of survival of the earth and human livelihood within ecological limits.²⁷

Social ecology does not begin or end with Bookchin. He has done much to place ecological questions on leftist agendas and he has integrated basic social questions into the ecological agenda. He has also tried to work out concrete proposals and guidelines for social transformation. Unfortunately, his polemical style has also alienated potential allies.²⁸

Social ecology is closely associated with the anarchist tradition.²⁹ The Russian geographer Kropotkin (1842-1921), the French geographer Elisee Reclus (1830-1905), the Scottish botanist Patrick Geddes (1854-1932), the North-American historian Lewis Mumford (1895-1992) and the Jewish philosopher Martin Buber (1878-1965) can be reckoned to belong to the lineage of social ecology.³⁰ Guha and Martinez-Alier have drawn special attention to the ecological relevance of the thought of Geddes and Mumford. They have contributed to the critique of the parasitical role of modern cities in relation to their hinterland and to constructive proposals for an ecologically responsible integration of cities into regions.³¹ Going beyond "agrarianism" social ecologists have attempted to address the difficult question of an ecological urban policy. Bookchin has tried this by connecting his anarchist perspective of local, municipal and regional democratic assemblies with the vision of a communitarian responsibility of citizens for the environment at various levels, and with the demand to replace a competitive free market economy by a co-operative 'moral economy'.³² Whatever the limitations of his "libertarian municipalism" and confederalism, they have the merit of placing problems on the agenda which many ecologists tend to ignore. Mumford's ideas carry potentially creative responses to a destructive globalisation and urbanisation process in the form of ecologically balanced, non-parasitical and diversified regional units.

4. Eco-Marxist Explorations

Many ecologists tend to condemn capitalist development and marxist-inspired socialism in one breath as equally harmful to the environment. The frightening and depressing record of ecological destruction after 70 years of central state planning in the Soviet Union and the widespread damage in other socialist countries seem to justify such equation of capitalism and state-socialism. Most critics assume

that this is a direct consequence of basic flaws in marxist theory. They point out that marxists have believed in large-scale industrialisation, mega projects, rapid economic growth, mechanisation of agriculture and modern technologies without considering the problem of ecological limits and balances.

Eco-movements in India have seen communist parties on the other side of the barricades as defenders of nuclear plants, big dams and so on. On the other hand doubts have slowly been spreading among them. The KSSP is making some impact by raising ecological questions. In the Chattisghar movement red and green have come together. The party-press has been writing critically about Monsanto's 'terminator' seeds. In Cuba 'environmentalism' was considered a bourgeois plot 10 years ago. Forced by circumstances, Cuba is today discovering that it is not going 'backward' when it promotes cycles as means of transport and vegetable gardens in and around the city as a step towards food security.

It is true that mainstream marxism has not taken the ecological question seriously and that this goes back to Marx and Engels, as we will see. However, instead of discarding marxist theory on this ground, there should be a re-reading and a re-thinking in the light of the eco-crisis. Such a process of rethinking is under way. Hopefully it will contribute to a red-green alliance or even synthesis, in which both learn from each other to integrate economic and ecological dimensions.

Soviet marxists and anti-imperialist nationalists have been fascinated with the technological capacities and economic growth of western countries. While opposing capitalism and imperialism, they tried to catch up with it by following its model of modernisation and industrialisation. Initially the Soviet Union seemed to be successful. Nationalist leaders like Nehru were thus inspired to opt for a similar course. Yet, two big obstacles stood and stand in the way of this type of development: the problem of accumulation and that of ecology. Modernisation requires the accumulation of capital. That is impossible without the exploitation of people and resources. The price for the industrialisation of the Soviet Union was the repression of peasants and a harsh disciplinary regime controlling the workers. Because of Russia's immensely rich endowment with natural resources and the lack of public discussion, the ecological damage remained invisible

for a long time. But now the extent of the devastation has become public knowledge.³³

The question is whether there was and is an alternative. Mainstream marxism had assumed that it was the 'mission' of capitalism to develop the productive forces of modern technology and that the socialist revolution would break the fetters of private ownership and accelerate modern development to the benefit of all. For this developmental vision of evolution, revolution and socialism Marx can certainly be quoted. Many marxists even argue that 'backward' countries should have waited for the socialist revolution to take place in the most developed capitalist countries, because only then socialism would be viable.

All these discussions used to leave out the ecological question, in spite of the fact that the law of entropy has been formulated in 1850-51, a few years after the publication of the Communist Manifesto. There were attempts by the Ukrainian agrarian socialist (narodnik) Sergey Podolinski to bring out the inescapable economic implications of this law in socialist journals in the early 1880s. Marx, to whom he presented a copy of his article, consulted Engels who was more familiar with natural sciences. Unfortunately and inexplicably – as he adhered to a materialist world-view – Engels advised against mixing up physics and economics.³⁴ It was this idealistic ignoring of material limits – which marxists shared with 19th century liberals – that led them to presume the inexhaustibility of natural resources while looking forward to the revolutionary unfettering of productive forces, never mind the ecological costs. Even 90 years later marxists failed to respond to Georgescu-Roegen's work on "the Entropy Law and the Economic Process", as Martinez-Alier complains.

The missed opportunity of developing an eco-socialist orientation at an early stage is all the more regrettable that Marx was involved during the last 15 years of his life in a dialogue with Russian agrarian socialists. This led him to a much more critical and sceptical view of the productivity-mission of capitalism and the linear evolutionary model. His extensive ethnological studies of early pre-class societies led him to the insight that we can "find what is newest in what is oldest", namely egalitarian socialist trends.³⁵

Marx became deeply interested in the revolutionary project of the Russian agrarian socialists who hoped to bypass a capitalist phase of exploitative development and to usher in socialism on the basis of Russia's ancient communal village structures. The revolutionary peasantry would save the rural commune and open a new chapter of revolutionary regeneration – with the help of new technologies from the West – without going through a suicidal destruction of communal property relations.³⁶ Though this prospect is not discussed in ecological terms, the connection with an ecologically more viable socialist transformation of an agrarian society is perceivable. Marx refers to India in one of his draft letters to Vera Zasulich when he calls the “suppression of communal land ownership nothing but an act of English vandalism which drove the indigenous population backward rather than forward”.³⁷ Of course, Marx does not advocate a return to the past like Gandhi did. But he affirms that the archaic past has a crucial role to play in the search for an alternative to capitalism.

Critical marxists have analysed the dilemmas and contradictions in the work of Marx regarding the natural limits to economic productivity and technological development.³⁸ As an adherent of materialist philosophy, one would expect Marx to respect these limits. However, it can be shown that he was reluctant to accept the significance of such limits and keen to emphasise the capacity of technology to overcome them. Benton shows that one of the reasons for this was the confrontation with Malthus who hammered on the definite limits set by population growth and who drew utterly reactionary conclusions from them. He further points out that Marx in his analysis of the labour process, which is central in his theory, focuses on the process through which humans transform nature. This is based on the model of artisanal and industrial labour. It ignores what Benton calls the “eco-regulation” types of work which do not transform and consume raw material but sustain or regulate environmental conditions, as it is the case in agricultural labour. We should add – as feminists have done – the work of care, which also does not fit into the productivist conceptualisation of labour, which Marx inherited from Adam Smith and David Ricardo. Marx moreover tends to ignore the natural limits in the transformative type of work, in terms of resources and impact on the environment. It seems that Marx, Engels and their

followers belittled the implications of their materialist convictions while getting carried away by the prospects of abundance through ever increasing productivity as the basis for a future socialist society. In the light of this critique Benton pleads for moving “towards a green historical materialism” which aims at the satisfaction of human needs through interaction with nature on the basis of the recognition of ecological limits.³⁹ This implies a re-thinking on basic questions such as labour and technology.

Further significant attempts to develop an eco-marxist critique of capitalism and an eco-socialist perspective can be found in the journal *Capitalism Nature Socialism*. In it James O'Connor has introduced the concept of the Second Contradiction of Capitalism.⁴⁰ In the history of marxist theory all the attention has been focused on the contradiction between capital and labour as the cause of the crisis which may finally lead capitalism to its end. This can also be stated as the contradiction between the forces of production and the relations of production. What O'Connor has termed the “second contradiction” relates to the “conditions of production” which pose limits and problems to capital in its drive for unlimited accumulation. The forces and relations of production are together facing the conditions of production as the cause of the crisis in the form of declining profits, rising unemployment, etc. Marx occasionally spoke of “physical conditions affecting production”. He already knew in those days that modern chemicalised agriculture was robbing the soil of its productivity⁴¹ and that bad harvests could lead to economic crisis. But he did not systematically analyse how capitalism itself, by its destructive methods, is creating natural barriers in the form of a second capitalised nature of capital-made wasteland, polluted seas, poisoned land, loss of biodiversity, etc.⁴²

New scarcities are emerging, such as scarcity of fresh air and clean water. All this belongs to the “conditions of production” which affect production, consumption and the accumulation of capital. Marx speaks of three kinds of such conditions: external physical conditions, labour power of the workers (their health, capacities, etc.), and the ‘communal’ conditions such as the means of communication. O'Connor expands the list: i) viability of eco-systems, adequacy of atmosphere ozone levels, stability of coastlines and watersheds, soil, air and water quality; ii) physical and mental well-being of workers

and their degree of socialisation; and iii) urban space, infrastructure and social environment.

Within this theoretical framework the impact of capitalism on the environment can be analysed. Altvater, as discussed earlier, takes a similar approach when studying the social and ecological limits of globalising capitalism. This implies that any vision of an alternative socialist society has to address not only the question of the exploitation and exclusion of workers, but also that of the ecological and social conditions under which the satisfaction of human needs can be achieved in a just way.

5. Eco-Feminist Perspectives

Feminist scholars have uncovered hidden connections between the violence against nature and the oppression of women. They have shown the parallels between the “conquest” of nature and colonies, and that of women as witches which took place in the same epoch at the beginning modernity. They have developed a strong critique of the violently dissecting, distorting, destroying ways of modern science and technology, which gives us a deeper understanding of the causes of the eco-crisis.

Francis Bacon (1561-1626) is one of the key figures in this critique. He is famous for having advocated an empirical knowledge based on active intervention in nature through experiments in order to find out its secrets, and so to extend human power over it. Instead of contemplating nature as an organic whole – as the traditional philosophers did – he dissected it into parts in order to establish control over it. Carolyn Merchant⁴³ – followed by others – has analysed the sexual allusions and imagery used by Bacon. These reveal conscious parallels between the penetrating investigation of nature and the torturous, penetrating physical investigation of women in the trials against women accused of witchcraft. Bacon speaks of the “mechanical arts” forcing “nature out of her natural state”, by putting her under “constraint” in experiments. It may be “low and vulgar” as he admits, but it works as “the nature of things betrays itself more readily under the vexations of art than in its natural freedom”.⁴⁴ In that way it is possible to find out “the passions or desires of matter which constitute the primary elements of nature”. He confidently hopes

that "there are still laid up in the womb of nature many secrets of excellent use" to be discovered.⁴⁵ In order to succeed a "true model of the world" has to be constructed, "which cannot be done without a very diligent dissection and anatomy of the world".⁴⁶ This should be a higher ambition than that of extending "power and dominion" over other countries (colonialism). It is the "endeavor to establish and extend the power and dominion of the human race itself over the universe". That "empire of man over things depends wholly on the arts and sciences".⁴⁷ Carolyn Merchant concludes: "The interrogation of witches as symbol for the interrogation of nature, the courtroom as model for its inquisition, and torture through mechanical devices as a tool for the subjugation of disorder were fundamental to the scientific method as power."⁴⁸

Bacon also speaks of the "right over nature" and the power over it, which belongs to the human race by "divine bequest". This refers to the Genesis text which speaks of "dominion over the earth" being given to humans. From this point onwards many critics of Bacon, taking his reference to Genesis as a biblical endorsement of his approach without further questioning, have blamed the Judaeo-Christian tradition as one of the sources of the eco-crisis, as we will further discuss below. Vandana Shiva has connected this critique of western modern science and its cultural roots with an eco-feminist reading of Indian cosmology. "Nature, both animate and inanimate, is thus an expression of Shakti, the feminine and creative principle of the cosmos." Nature is known as Prakriti, primordial power, Mother of all forms of life.⁴⁹

In general eco-feminist theory, starting from a critique of Francis Bacon, Rene Descartes and Isaac Newton has developed a critique of the male domination inherent in modern knowledge systems (with their dualist rationalism) and modern industrialism.⁵⁰ The critical analysis of male dominance in the development of modern science and technology and male responsibility for the eco-crisis caused by modern industrial society, has led to reflections underpinning the role of women in eco-movements.

In western countries eco-feminism has emerged as a new philosophy, which speaks of feminine principles as being supportive

of a harmonious relationship to nature. It has also taken religious forms, including the re-discovered worship of Goddesses.⁵¹ Eco-feminist publications speak of "reclaiming the earth", "healing the wounds" and "reweaving the world". The underlying hope has been that the combination of the critical and transformative potential of ecology and feminism would bring about a powerful movement for cultural and social change, overcoming patriarchy, militarism, the plundering of resources and the rape of women and of nature.

Two main tendencies can be distinguished: cultural or spiritual and social eco-feminism. Nature/cultural feminists base their approach on the assumption of a close association between women and nature, and on empathy, caring and affirmation of life as essentially female characteristics which can help to develop better, less violent, more sustainable ways of living. Some connect this with worshipping the Goddess of the Earth or also of destruction.⁵²

This cultural/religious form of eco-feminism is mainly found in western countries and comes close to deep ecology. The other stream, social eco-feminism, comes closer to social ecology and is found much more in women's movements in the South.⁵³ These feminists base their analysis not on essential natural feminine principles, but on the sexual division of labour and its consequences, which are both social phenomena. Together with others, Maria Mies⁵⁴ has traced the subjugation of women by men – in a materialistic analysis – to the differences in relationship to nature between women whose role it was to let grow and make grow, and men who as hunters developed tools of destruction which could also be used as means to subjugate others. Thus subsistence production of life was associated with women, whereas men were associated with the development and control of technology.

Today patriarchal society still assigns particular roles to women, such as care for children and providing water, fuel and fodder for the household. This keeps women in closer touch with nature than men who are more integrated into the cash economy. Because women have been much more involved in direct interaction with nature in the context of a subsistence economy, they have been much more alert to the damage being done to it. In the process, they are suffering both

from repressive violence exercised by patriarchal society and the increasing burdens caused by the deterioration of the environment. Liberal feminists draw from this the conclusion that women have to be liberated from their marginal existence in the subsistence economy and empowered to play an equal role in the market economy. Many state and NGO development projects have this as aim.

Eco-feminists like Maria Mies, Gabriele Dietrich and Chhaya Datar draw an opposite conclusion. As Gabriele Dietrich puts it, instead of drawing women into the market economy, "brutalising their ecological perceptions", men have to be drawn "into the field of production and sustenance of life" to "humanise their perceptions", as one step to overcome the ecologically harmful division of labour.⁵⁵ Eco-feminists have contrasted the paradigm of modern capitalist development on a world scale with that of a subsistence economy centered on the "production of life", which for long has been the invisible work of women. Maria Mies and Vandana Shiva indicate the direction in which they search for a new vision by referring to the Chipko movement, 'people's dams' like the Baliraja dam, the NBA, the Mukti Sangarsh and People's Science Movement and some new trends in the North.⁵⁶

The co-authorship of Maria Mies and Vandana Shiva indicates that the distinction between spiritual and social eco-feminists should not be applied in a rigid manner. Vandana Shiva has articulated an eco-spirituality centered on the idea of the feminine principle which she finds in the Indian religious tradition,⁵⁷ whereas Maria Mies has made a theoretical effort to provide a materialist base to eco-feminist theory. Yet they are able to develop a common eco-feminist perspective. This can be taken as a pointer to overlappings and cross-fertilisations between the various approaches discussed above and to the possibility and need of alliances being formed, taking ideological diversity as a potential challenge to develop more self-critical and comprehensive positions.

B. BASIC ISSUES

The review of various tendencies in eco-movements has shown that there are serious ideological differences which eventually lead to different practical priorities. It would be wrong to conclude that these tendencies are all mutually exclusive and cannot come together on

common platforms or in alliances. There is overlapping, convergence sometimes, and mutual recognition on the basis of practical co-operation. Arne Naess, the deep ecology philosopher comes close to social ecology on many points and distances himself from the extreme position of people who in the name of deep ecology welcome AIDS and famines.⁵⁸ The eco-marxist journal *Capitalism Nature Socialism* has published articles which express appreciation of some of the deep ecology concerns and try to build bridges between both positions.⁵⁹ And in eco-feminism we have just seen how Vandana Shiva on the one hand comes close to religious philosophical ideas akin to deep ecology, whereas she teams up with Maria Mies who has used marxist insights in her analysis of the connection between capitalist accumulation and patriarchy, and who has presented a social, materialist analysis of female eco-consciousness on the basis of the sexual division of labour. Many leftists may fear potential rightist anti-human tendencies in eco-movements. These exist, but they can be marginalised if broad red-green alliances are built among all those who share a common concern for a socially just protection of the ecological basis of life on the planet and the survival of humankind.

In order to make alliances and co-operation feasible and mutually enriching, it will be helpful to deepen our discussion of some of the main issues which tend to divide us. The following selection of issues is not exhaustive but representative.

1. Anthropocentrism

Ecological studies make it clear that the eco-crisis is not a natural but a man-made catastrophe. Even the present changes in the climate are caused by the wasteful and harmful ways in which humans in modern society interfere with nature and exploit its resources. Deep ecologists have concluded that the source of all troubles lies in the central and self-centered role played by the human species, which they call "anthropocentrism". Benton, Bookchin, Guha and others have questioned this approach. They agree that especially in modern society the relationship between humans and nature has become very alienated and destructive. They also agree that attitudes towards nature have to change and that nature cannot be treated as dead matter as has been done since Bacon and Descartes. But they rightly refuse to

define and discuss this problem in terms of either “humans” or “life” or “the Earth” being in the centre.

To begin with, there is no point in denying that the human species plays a special, unique role in relationship to other forms of life and the planet as a whole. Humans are part of nature and at the same time cultivators, creators of cultures, artisans and makers of history unlike other species. In order to satisfy their needs they have to use nature, as the eight points of deep ecology acknowledge. That must not automatically lead to conquest and destructive domination over nature. That it has indeed become very destructive in modern capitalist society and in its various imitations is not simply because “humans” are in the centre, as if all humans are equally to be blamed. One could even say that it is because humans are no longer in the centre; capital, profit accumulation has become the heartless, merciless centre of society and humans have become its devotees, slaves and victims. However alienated they are in industrial society, humans can eventually come to their senses when they see the havoc of a destroyed forest or realise how pesticides and air pollution cause cancer. Humans can stop and turn around, but capital can only hurry on.

Humans can free themselves from the chains of capital. And they have the unique responsibility to do so – for their own sake and for the sake of the human species and nature as a whole. When issuing their warnings and writing their books, the deep ecologists address humans and thus acknowledge their “special” role – if we want to avoid the word “central”. And when people are persuaded to turn around, join an eco-movement or start an eco-farm, then they do what humans are meant to do: they take responsibility for a beneficial interaction with non-human nature.

The problem is that humans don’t turn around by instinct, as other species do when they sense danger. Humans are guided by instinct only in a limited way, as far as their immediate needs are concerned, and even then their responses are modified by cultural patterns and norms. When it comes to the use of nature for other purposes, they need a conscience, social customs, cultural values and ecological wisdom to guide them. That is the dangerous uniqueness of the human species. They can be driven by greed and lust for power, they can

decide to ignore the limits and plunder the earth. Unlike tigers and other animals they may go on killing. They may smell dangers and yet go ahead. To address this complex human constitution, we have to combine an appeal to their survival instinct or interest and their sense of human dignity and responsibility, with a re-awakening of their sense of belonging to the larger reality of the biosphere and the earth which has been articulated by deep ecologists and others. In conclusion, the choice is not “either-or” but “and-and”. It is not either anthropocentric or biocentric or eco-centric, but the challenge we are facing is to learn to be deeply concerned about human life – both individually and collectively – *and* about all other forms of life *and* about the planet earth, about society *and* nature, about human history *and* the cosmos, about struggle for justice *and* water harvesting, about red *and* green.

The basic target of the deep ecology critique is not so much the central position of humans, but their *domination* over nature. Since Francis Bacon “dominion” over nature has indeed been understood and practised in a devastating way. The fascination with technological progress, imperialism and the globalisation of the capitalist economy have together resulted in the present eco-crisis. The concept of “domination” does not necessarily imply “destruction”, as Rainer Grundmann in his dialogue with Ted Benton has pointed out.⁶⁰ True mastery, it can be argued, uses but does not destroy. Yet, Benton is right to criticise the notion of limitless mastery over nature as an idealistic Promethean project in which humans ignore the limits given in nature. Instead he supports the more sober approach of Walter Benjamin who said that “technology is not the mastery over nature but of the relation between nature and man”.⁶¹ This means that humans have the common responsibility to control their interchange with nature. Such control must be the basis for eco-socialism. This question requires the further analysis and discussion of eco-friendly technologies and labour processes. It also needs to be connected with a reflection on the different dimensions of the human relationship to nature. As Benton observes, Marx on the one hand makes crude remarks against nature worship and the romantic appreciation of nature, but on the other hand speaks of the “spiritual nourishment” provided by nature to the human consciousness.⁶²

The deep ecology critique of human domination results in a rejection of any hierarchy of values and the promotion of an eco-centric approach which is supposed to give equal value to all forms of life. In India we have the example of Jains and their attempt to be totally non-violent in their relationship to other living beings. Such respect for all forms of life is a challenge to remember the inter-connectedness of all life, and the cautious care which is needed in order not to damage the webs of life. But it is another thing, it seems to me, to assume that all forms of life are equally valuable, whether it concerns cockroaches, scorpions and mosquitoes or dolphins, sheep and cows or humans.

A connected problem is whether we think of the protection and survival of life in all its diversity in terms of species or also of all individual members of a particular species. And if we speak in terms of species do we apply this also to humans? Or do we make an exception there? There is a basic conflict here between various forms of social darwinism and secular and religious humanism. Biologically and ecologically speaking, what matters is the survival of various species and the maintenance of balance between them. Nature can be harsh in leaving weaker members of one or the other species to die. Charles Darwin has spoken of the "survival of the fittest". Social darwinists like Herbert Spencer and later, fascists and Nazis in the 20th century have applied this to society. On the basis of this particular interpretation of nature and the "laws of the jungle", they justified racism and the extermination of those who were deemed unfit to live, ranging from the genocide of Jews to the mass killing of mentally handicapped, homosexuals and gypsies. Others, including liberal and social-democratic govts. have indulged in sterilising non-desirable characters. The latest developments in genetic manipulation make this a burning question again.

I am not suggesting that deep ecologists are close to fascists. Their respect for biological diversity and all forms of life should guard them against any affinity with ideologies that glorify violence and destructive domination. But their eco-centrism makes them vulnerable to look at the right to life in the sense of species, as their 8 points advocate a smaller human population on the planet for the sake of survival.

Population growth indeed creates increasing pressures on ecosystems. A reduction is certainly desirable. But there are various unacceptable proposals to achieve this goal. Not many politicians and planners may openly make Malthusian suggestions to the effect that it should be left to nature to do the dirty job to sort out who is strong enough to survive. Actually however, neo-liberal policies of reducing state-sponsored health-care and welfare measures are indirectly curbing the population growth by increasing the mortality rate of the unprotected poor. In the former SU the life expectancy has fallen by 20% in the last ten years. From a biological, species-oriented perspective, this may be a healthy development, however painful, as it contributes to a slowing down of population growth. I suppose that deep ecologists will assure that this is not how they want to reduce the population. The question for discussion between them and socialist and religious humanists is then, whether they agree that even the weakest member of the human race, let us say a mentally retarded girl child, has a right to life and that our eco-policies should be designed in such a way that they don't undermine but enhance this right.

Last but not least, we have to come back to the objection of Bookchin and others to the tendency of deep ecologists to blame humans in general, as species, without differentiating between those who bear the main responsibility for eco-damaging practices and those who are affected as victims. Eco-feminists make a similar point when they replace "anthropo"-centrism by "andro"-centrism, as they analyse the dominant role of males in destroying the eco-friendly knowledge systems and practices of women and in replacing them by a dualistic, conquest-based regime over women, colonies and nature.

Further differentiations have to be made. Along with the sexual division of labour, there are other divisions which distribute responsibility for what is happening in an unequal way. Not all men behave like conquerors, not all harm nature. And those who work in eco-damaging jobs are not automatically doing so of their free will. Middle or upper-class eco-activists sometimes treat workers who are afraid of losing their jobs in polluting industries or in logging companies as innate enemies. Unless the problems of such workers are taken seriously, the eco-movement cannot succeed in showing an alternative path to society as a whole. Either alternative work opportunities have to be

found or alternative eco-friendly practices have to be offered, which make closure unnecessary. This will be further discussed in the final chapter.

2. Religious Motives

It is not surprising that religious motives appear in the search for an ecologically viable society. Basic questions about the relationship of humans to nature, the value of various forms of life and the very purpose of life are being raised and the need for a new spirituality is felt. In this quest the possible contributions of different religious traditions are being discussed and new religious orientations are being offered. The calculating and dissecting rationalism of modern science, technology and economics is being accused of having lost the feeling for the sacredness of life and the sense of wonder for the mysteries of the cosmos. This critique often includes a negation of the Jewish-Christian-Islamic tradition as being responsible for depriving nature of its divine character.

However, the overall picture of the religious tendencies in eco-movements and theories is very complex and rather confusing. Bookchin vehemently argues against religious mystifications in deep ecology and represents an atheistic tradition. Eco-feminists pursue various paths: Vandana Shiva relates to Shakti as the female principle in Hindu tradition, whereas others go for the worship of primeval goddesses and still others do a re-reading of their Jewish, Christian or Islamic tradition. Deep ecologists may refer to primeval tribal religiosity or to the high principles of Taoist and Buddhist epistemology. Herman Daly and John Cobb combine a critique of anthropocentrism and an option for a biospheric eco-vision with a faith option for theism in the Jewish-Christian tradition.⁶³ And among secular-atheistic ecologists, we find some like Bookchin who base themselves on a materialist/naturalist philosophy and others who assume a marked difference between the forces which determine non-human nature and those which guide humans.

It appears from this bewildering variety that eco-motives can ally themselves with different philosophical, spiritual and religious traditions. It is important to face this diversity with an open mind. Listening to other approaches can contribute to an enriching re-reading of one's

own spiritual tradition,⁶⁴ which in turn will strengthen the basis for alliances. It is not possible to discuss in detail how various religious traditions relate to nature and the role of humans in it. But I would like to make a few tentative methodological remarks for those who want to pursue such questions, and I will then illustrate the complexity of such studies with some reflections on my own tradition.

1. While studying ancient religious texts, it should be kept in mind that they do not directly answer our questions. They are not addressing our problems of global eco-crisis, pollution and depletion of resources. While speaking of humans and nature they relate to earlier experiences, which differ from context to context.⁶⁵ However, we do not need to reduce the value of such texts to what they said long ago in a context which is not ours. Through careful interpretation we may find relevant insights and paradigms which speak to our situation. The flood can become a paradigm of eco-catastrophe and Noah's ark a paradigm of the survival – and the need for survival technology – of humans in one boat with all other species. Or take the creation myths of Adivasi peoples. They are full of relevant ecological insights, even though they may not directly agree with such interpretations.

2. The choice of criteria to identify what is – positively or negatively – ecologically relevant requires careful reflection. Eco-friendly scholars may for example look for texts which express the veneration of nature's beauty, goodness, diversity or abundance.⁶⁶ They may find fault with saints who have opted for an ascetic life of contemplation and withdrawal and who may be charged with being "hostile" to nature. But practically speaking, such saints could be appreciated for reducing the burden on the environment by minimising their physical needs and leading a life of contemplation, unlike the nature lovers who are trekking and travelling long distances in search of nature. Or Jains may aim at liberation from the psycho-physical world, yet that motivates their non-violence which poses a challenge to the destroyers of nature. This means that we should not stop at the philosophical or doctrinal level, finding out how various traditions speak about the material world, but look into the practical connections of various approaches.

3. It is through their moral teachings and sanctions that religious traditions have contributed most to shaping human attitudes towards

nature. This includes their rules regarding food, fasting, clean and unclean animals, etc. These teachings have to be understood in their original context. Often their original purpose can no longer be understood. What remains relevant in any case is the basic assumption underlying the dharma and torah, namely that life has to be protected by commonly accepted rules, and that humans are accountable for what they do in relationship to nature. The problem is that these rules may be part of a repressive social system which denies equal access to nature's resources. Brahminism may preach the virtues of vegetarianism and honour the cows, while denying access to clean water to Dalits. Obviously the systematic refusal of eco-justice – whether it is by Brahmins or upper-class wildlife protectors from the USA – totally undermines the credibility of their support for eco-causes.

4. Eco-activists have particularly turned to the cultural-religious traditions of indigenous peoples such as the Adivasis in India. Their cosmic religiosity appeals to those who want to overcome the alienation from nature in modern society, which meta-cosmic religions⁶⁷ could not prevent. Some of it has survived in popular village religion, its rituals and festivals, and fears also. Again, the context has to be kept in mind in order to avoid romantic illusions. But there are convincing examples of a re-discovery and re-interpretation which can enrich meta-cosmic traditions.

To review in depth the questions which are at stake, would require more than a few pages. I limit myself here to the example of my own faith tradition and its re-reading under the pressure of critique and the eco-crisis. In the 1950s and 1960s there was a Christian tendency which welcomed modern science and technology and the desacralisation of all areas of life on theological grounds. It claimed – directly or indirectly endorsing Francis Bacon – that the biblical outlook by denying other gods and divine presence in the cosmos, had opened the way for science and technology to freely interfere with nature and subject it to human purposes. More recently, Chinese marxists showed some special interest to dialogue with Christian scholars as they assumed that Christianity would be best equipped to cope spiritually with the unsettling effects of modernisation. Many Christian scholars have indeed tried to show that Christian faith has no problems with modernity. Christians from the North-East, who are concerned

about the ecological havoc caused by deforestation, have started realising that Christian missions – by removing certain tribal customs, practices and taboos which regulated the relationship to the trees of the forest – have helped to open the way for careless tree cutting and the entry of commercial logging.⁶⁸ Liberation theologians have been critical of capitalist exploitation but their focus on liberation from oppressive powers tended to concentrate on human history, its struggles and prospects, while it took time for them to respond to the challenge of the eco-crisis and admit the neglect of creation concerns.⁶⁹

These examples explain why Llyn White in his famous article could put the blame for the spiritual causes of the eco-crisis on Christian religion and especially on the biblical account of creation, with its statement about “dominion over the earth” being given to humans.⁷⁰ This charge has become widely accepted and is often repeated without further scrutiny. We have to distinguish between the responsibility of Christians and Christianity for the eco-crisis caused by western civilisation and the role of the Bible in it. Western Christianity is certainly to be blamed for its contribution to the crisis. But its basic fault and failure lies not in having listened to what the Bible has to say, but rather in having not listened to it. Otherwise Christians would have prophetically unmasked and resisted the spirit of conquest which prevailed in colonialism and capitalism and their subjugation of nature for the sake of Mammon.

Evidence for the charge of Llyn White can be found in the history of Christianity, but not in the biblical sources of Christian faith which Bacon quotes but without understanding their context. Earlier Christians may have been indifferent to nature as they were preoccupied with the salvation of their souls, as many other religious believers. Modern Christians may have read their Bible through the glasses of Bacon and Descartes. But a re-reading with the eco-crisis in mind brings out a close appreciation of nature in the context of a pre-modern society, and thorough warnings against the sinful vices of human arrogance and wealth accumulation, which can help in our present context to develop an eco-friendly spirituality and ethos.

Re-reading the creation stories in the opening pages of the Jewish and Christian Bible, to which Bacon referred,⁷¹ I no longer find there any license for the conquest of nature, as I was made to see in it 40

years ago. The “dominion” mentioned by the ancient author(s) is not what Bacon had in mind. And the “earth” over which humans are given “dominion” is not the passive, dead matter of Descartes and much of modern science after him. I have long wondered whether Llyn White has ever bothered to read the preceding and following passages that speak of the earth as a living fertile organism, to which the Creator has given the potential to bring forth vegetation: “plants yielding seed, and fruit trees of every kind on earth”. Similarly the waters are told “to bring forth swarms of living creatures”. And the earth is told to “bring forth” all sorts of animals, “cattle and creeping things and wild animals of the earth”.⁷² That is the earth, teeming with life in all its diversity, and “God saw that it was good”. The living earth – the opposite of dead matter – is entrusted to humans to rule over it. Rule, then, does not mean the license to destroy, but the responsibility to protect, foster and nurture. This rule should resemble the rule of God, the Giver of Life, in whose image humans are created, as this text puts it.

Forget, for a moment, terminator seeds and nuclear bombs – the opposite – and think of a shepherd, peasant and artisan society. That is the sort of “dominion” these authors have in mind: cultivation of seeds and crops, cattle raising and tool-making or weaving. The expression “rule” is balanced and guarded against misunderstanding by the expression, in the second creation account, “to till (literally to serve) and keep” (or to protect) the garden.⁷³ While there is no license to destroy, there is permission to use the garden for food; initially this is limited to plants, later it includes animals.⁷⁴ The ultimate, utopian vision is that of a non-violent nature, in which lamb and wolf, children and serpents, cow and lion peacefully live together.⁷⁵

It is amazing that even theologians, who are supposed to know their scriptures, have often overlooked or ignored fundamental texts like that on God’s covenant with the earth and all life on it,⁷⁶ which affirm human and non-human life in its diversity. Christians working in logging companies or high-tech fishing companies or agro-business firms may feel free to participate in eco-damaging operations because their churches have not alerted them. But the Bible written long before today’s large-scale destruction can help in the process of re-thinking, and repenting of, such practices.

Another widespread, unwarranted misunderstanding is rooted in the assumption that theism or a monotheistic faith in a personal, transcendent God must per definition be hostile to nature, because it does not consider nature as sacred and permeated by the divine. This assumption creates a deep divide between the adherents of Jewish-Christian-Islamic traditions and those of other religions. There may be many members of these religious communities who are indifferent to nature, or ruthless towards it and irresponsible in their behaviour. But that is not how they are meant to be according to the basic tenets of their faith. The songs of praise for God the Creator celebrate life in all its beauty and diversity as a gift. While a pious Hindu may begin the day with worshipping the sun and mother Earth, the pious Jew or Christian or Muslim may thank God for the same. Such prayers and hymns of thanksgiving and wonder imply that indifference and hostility towards nature are nothing less than an offense against God the Creator. In these songs we find not only the expression of gratitude for that which is useful, such as grass for the cattle and food for the people.⁷⁷ They are also full of joy about the trees in which the birds find a place, and the mountains which provide a habitat for the wild goats.⁷⁸ All plants and animals are seen as depending on the spirit of God, the breath of life.⁷⁹ Human life is perceived in its embeddedness and interconnection with other forms of life, each in its own realm, and divine transcendence does not exclude the in-dwelling of the creator in creation, as the Jewish idea of *Shekinah* expresses.⁸⁰

Many parallels from various religious traditions could be cited, all reflecting ways in which people in pre-modern society related to nature as a divine gift. Other dimensions of religious faith – in the biblical tradition and elsewhere – have also to be taken into consideration. Some speak of the earth as “sacred” and put taboos on violations like the cutting of trees. Sacred groves are an example. Others acknowledge the fact of human interventions, for example in mining, and express their awe for such human endeavours, but then go on to question them in their songs or myths. Commenting on the immense capacity of human technology, the book of Job asks, “but where shall wisdom be found?”, which guides us to fear God and to depart from evil,⁸¹ a penetrating question which is more valid than ever vis-a-vis genetic engineering and the like.

Next to the question of earth and space we have to consider that of sacred time. For capital “time is money” and that is why it speeds up accumulation. Marxists and liberation theologians – myself included – have looked at that phenomenon, focusing on the exploitation of workers who spend their life-time in wage-labour. But there is an ecological dimension too. The 24-hour-a-day economy, the machines which never stop, all that money-making and uninterrupted activity hasten the destruction of the environment. Traditional societies had a rhythm of work and rest. They knew when to stop, pause and celebrate. They knew of sacred time, time set apart, which reminded them that they were not born to work and slave for the sake of accumulation. For Israel the sabbath, the 7th day of rest was such a “sacred time”, meant to sanctify and give meaning to the other 6 days as well. This day was meant for all, humans and their animals.⁸² There was even a whole sabbath year, a 7th year in which the land had to be left fallow and get rest.⁸³ This finally culminated, once in a life-time, in the jubilee year, the fiftieth year, a year of “freedom” and restitution of the share of land which a family may have lost.⁸⁴ The time of market business, the time of production gets interrupted and accumulation is undone. This is at the core of Jesus’ message as the alternative to the regime of “Mammon” or wealth accumulation.⁸⁵ Announcing the coming reign of God as a kingdom of sharing, he appeals to his followers to trust in God the Creator who cares for birds and flowers and knows our needs.⁸⁶ This aspect has initially been overlooked in liberation theology, but it is crucial to see the connection between God’s blessings of life in creation and the need for liberation from structures which block and destroy the flow of those blessings.

3. The Question of Needs

It is somewhat amazing to see massive studies about ecology and economy which do not go into the question of needs.⁸⁷ But that is a crucial problem. The ruling economic powers base their – ecologically unsustainable – drive for ongoing economic growth on the philosophy or ideology that the human species consists of individuals who are driven by unlimited wants. They know that they can go on accumulating only if they can succeed in creating ever more new needs, new desires, new wants. They argue that it would be against human nature to accept or impose a limit. And it appears as if they are right, if you go

into the shopping streets and centres and observe consumerism in full swing. Does not the appeal irresistably spread into smaller towns and even villages? Is not everybody who can buy getting hooked up? Does that not prove that humans are insatiable consumers?⁸⁸

The answer has to be a firm “NO”, even if it has to be admitted that it is difficult to find out how to get off the hook, how and where to draw the line, and how to liberate ourselves and others from those chains. The proof that all this consumerism is not the spontaneous outcome of human nature lies in the fact that the sellers of the latest commodities have to spend enormous amounts on advertising in order to overcome people’s inhibitions and persuade, push or seduce them to buy things which only a short while ago they did not know that they “needed” them. Things which we know that we need them do not need to be advertised. The sellers of rice and vegetables, salt and sugar and other necessities of daily life do not have to spend on TV spots in order to sell their goods. Advertisements try to persuade us to buy and do things which we did not do before and did not miss either.

Professional psychologists are employed to find out how to focus our hidden desires on the products they want to sell. Sexual desires are for example manipulated to seduce us to buy a motor-bike or a car. They appeal to our dreams of freedom and suggest that one or the other motor-vehicle will satisfy them. Or they tickle the desire to be envied by others or be the first. In any case, human desires are being manipulated, subsumed under the desire to have more and more. This is a distorted and distorting understanding of the human being and the complexities and tensions of the human soul. If we want to overcome capitalism and the eco-crisis, we have not only to fight free-market policies and ownership structures, but also to confront this attempt to reduce human beings to money-makers and commodity-worshippers. Too many anti-capitalists try to avoid this confrontation and forget their political-ideological convictions when they go shopping. The difficult question is how to develop convincing alternatives in the satisfaction of our needs and the limiting of our wants.

Mahatma Gandhi – and Mao Tse-tung in his earlier days – projected an ascetic answer. Gandhi tried throughout his life experiments to still

further reduce his needs and to control his desires. For him that was not a private affair but a highly political one. That is why he could write about goat's milk or peanuts on the front page of *Harijan*, side-by-side with articles about the struggle against British imperialism. For him the development of an alternative life-style was part of that struggle. In the same way he would openly discuss his attempts to control his sexual desires as a matter of social and political relevance.

The history of Gandhism after Gandhi and of China after Mao indicates that asceticism does not provide a long-term solution. It may be attractive in the time of struggle, as can be seen from the way in which Gandhi influenced the life-style of early Indian communists like E.M.S. Namboodiripad and A.K. Gopalan. But it has no mass appeal when it comes to the economic development of society. This was also the experience in the Soviet Union. Once basic needs were taken care of, which was a tremendous achievement,⁸⁹ people started longing for the satisfaction of other needs and orienting themselves towards the western, consumerist model. No "iron curtain" was able to prevent that. Long before the Berlin wall collapsed, the communist party leadership surrendered to this pressure by promising higher living standards, cars and the like, and then unavoidably lost to the superior capitalist competition. What socialist society needed as a real alternative to capitalism, was an attractive model of a society which does not revolve around maximum consumption but offers maximum space and stimulation for the blossoming of free social interactions and creative expressions of human potentialities.

To opt for a second-hand consumerism was not in the spirit of Marx. He did not raise the question of limits to needs from an ecological perspective. But he fundamentally criticised how human needs are denied or distorted in capitalism, by the denial of the satisfaction of the most elementary needs (like even fresh air) of the poor on the one hand, and by alienating the rich from truly human needs on the other hand.⁹⁰ The pursuit of money comes in the way of human self-realisation, he said. "The less you go to the theatre, the dance hall, the public house, the less you think, love, theorise, sing, paint, dance, etc., the more you save... The less you *are*, the less you express your own life, the more you *have*, the greater is your alienated life."⁹¹ According to Marx, socialism will replace material wealth and poverty by the

“rich human being” who is “in need of a totality of human manifestations of life”, and the poor human being who is “in need of the greatest wealth – the other human being”.⁹² In this vision Marx certainly presupposes an abundance of material goods for all as the result of increased productivity, but he also helps to reflect afresh on human needs and to face the necessity to limit the production craze of consumerist society.

Critics have expressed doubts whether these problems can be discussed at all in universal terms, as human needs differ from place to place and time to time, being shaped by different cultures. If this would indeed be the case, then it would be impossible to work towards a global understanding of the need to curb further growth in such a way that the satisfaction of the basic needs of all gets priority. Then we would have to accept that North Americans cannot be asked to curb the emission of toxic gases, because that would affect their culture, the “American way of life”. This approach can be used as an excuse for refusing solidarity with the poor. All the same, needs are undoubtedly mediated by culture, and priorities and perceptions differ.

Yet, it should be possible to come to a common understanding of “fundamental human needs”, a concept developed by Max Neef and his colleagues in a workshop for “Human Scale Development” for Latin America.⁹³ They stress that fundamental human needs are universal, but that their satisfiers – i.e. the ways and means to satisfy these needs – vary according to culture, region and historical conditions. This means, there are choices, we can look for other satisfiers which are not ecologically harmful and we can learn from each other, as it happens already in global networks. It is worthwhile to reproduce their list of fundamental human needs and correlate them with various possible satisfiers:

- * Subsistence: e.g. health, food, shelter, clothing.
- * Protection: care, solidarity, work.
- * Affection: self-esteem, love, care, solidarity.
- * Understanding: study, learning, analysis.
- * Participation: responsibilities, sharing of duties and rights.
- * Leisure/idleness: curiosity, imagination, games, relaxation, fun.
- * Creation: intuition, imagination, work, curiosity.

* Identity: sense of belonging, differentiation, self-esteem.

* Freedom: autonomy, self-esteem, self-determination, equality.⁹⁴

One may have questions here or there, but this approach basically helps us to imagine that a post-capitalist, eco-friendly and just society need not be a grim, restrictive proposition. It could be much more satisfying than the present society which gives a pseudo-satisfaction of many of these needs for the rich and sows the bitter seeds of envy in the poor who are excluded.

This also gives a convincing explanation for the fact that so many well-to-do people in capitalism are dissatisfied and that many do not behave according to the neo-liberal textbooks of economics. C.T. Kurien has highlighted this encouraging phenomenon that many economic activities, even in the most developed capitalist countries, are not guided by 'rational' calculations of gains and losses, but by other motives such as a hobby, friendship, creative aspirations, or solidarity.⁹⁵ The question which arises is whether and how this potential can feed a politics of transformation.

CHAPTER V

ALLIANCES FOR ECO-JUSTICE

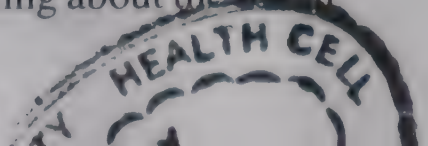
Introduction

The struggle for eco-justice requires nothing less than a radical reorientation and a revolutionary reversal which breaks the chains that keep the globe in bondage to capital. We need liberation from capital's cancerous growth, its exploitation of labour, debt regime, control over science and technology, tyranny over people's minds through the media, and reinforcement of the divisive structures of patriarchy and caste.

This means we cannot avoid politics. It is not enough if we personally maintain an eco-friendly life-style and support one or the other micro-level alternative experiment. Struggles have to be fought, as in the Narmada valley or along the coast, with mass mobilisation and great tenacity over long periods of time, in order to stop the TNCs and the govts. and defend or create spaces for survival and alternative ways of production and consumption. Furthermore, we need world-wide resistance against the old/new imperialism of the US and its allies which undermines or even boycotts any attempts to address eco-problems through global negotiations and regulations, especially in the framework of the UN, if these affect their short-term economic interests, as we have seen in Kyoto for global warming and Cartagena for biosafety.

Political resistance takes place in many forms and at many levels, from the local to the global, from yatras to the formation of parties. Its horizon is that of a radical and large-scale civilisational transformation, while its praxis consists of many, many small steps in the right direction and many confrontations with the powers that be.

The eco-crisis confronts us with the need for a new type of politics which goes beyond the traditional approach. We need strategic, lasting alliances in all areas of life, which can gradually bring about the social



and economic transformation of society. These fundamentally differ from the opportunistic short-term "alliances" of parties aiming at a share of power. This raises the question, how people's movements should relate to the political process. This strategy has to be related to the new political logic which is implied in an ecological approach.

1. Eco-Logic

The strategy of the traditional Left has been based on the concept of a vanguard party leading the struggle for the conquest of political power and subordinating all other struggles to that overriding purpose. Women, Dalits, peasants and indigenous peoples were all supposed to primarily identify themselves with the class struggle for political power. Social transformation would follow the successful political revolution.

Independent social movements have been challenging this approach by launching struggles on particular issues, while leaving the question of political power open or even unaddressed. Some see this as a welcome development over against a state-focused approach. Recent calls for a "new politics" are indeed based on the belief that the needed radical democratisation has to take place simultaneously in civil society and in the political arena. The difficult task is to develop forms of social, economic and political life which can contribute to a comprehensive democratisation of society as the basis of social transformation.

A reflection on the political implications of an ecological approach may help in the search for such forms. One of the basic insights of ecological science is that all life is interconnected and that it cannot be managed from a single central point. Life has its own highly complex logic which needs to be respected at all levels. This has important implications regarding the search for a viable alternative society.

a. Ecologically, survival depends on biodiversity. This runs counter to homogenising technologies and economic policies and practices. It implies that a viable socialist project cannot simply aim at replacing global capitalism. It will have to aim at an alternative system of planning and decision-making from below and a choice of technology which protects biodiversity and is appropriate for the specific local situation,

in terms of both ecological conditions and people's concrete needs.¹ Such a down-to-earth, ecological-materialist approach would be in harmony with the demands of a socialist strategy to attack mass poverty by starting from organising local resources to meet local needs.² This strategy is based on the insight that mass poverty is also a product of homogenising, centralising economic policies.

b. Ecologically, all life is interconnected. Local eco-systems are connected through many mediations with global life-sustaining processes. Ecologists are led from the micro to the macro, from the local to the global, and back. Penguins in the Antarctica are poisoned by pesticides which have been sprayed thousands of miles away and have reached them through the food chain. The same penguins are now threatened by the melting of the ice-cap due to global warming caused by the burning of fossil fuels anywhere in the world. This means that local eco-activists must have a global horizon, and that global survival depends on people acting locally in an informed and responsible way. This is not new for socialists who have a long tradition of linking the local and the global. The time is perhaps approaching to think of a Red-Green New International.

c. Ecologically, humankind and nature need a basic change in their relationship, turning from destructive to life-sustaining means of interaction. This may be called a cultural revolution or rather a cultural renaissance or rebirth. Capitalist modernisation has been destroying a wide range of life-sustaining skills and values. Cultural revolutions in the name of socialist modernisation have done the same. Through various social movements, a reappropriation and renewal of such skills and values which are still alive among some sections of marginalised artisans, peasants, Tribals and Dalits and among them especially women, is being envisaged. Simultaneously a search for non-destructive life-sustaining, appropriate, new technologies is bearing fruit. A viable eco-socialist project will integrate both. This will help to solve the dilemma of the past which made marxist socialists condemn capitalism for its destructivity and the misery it caused, while accepting that traditional peasants and artisans have no other future than to become proletarians. Instead, eco-socialists will see them not

only as victims but as bearers of precious knowledge, for example of traditional seeds or water-harvesting systems, who have their own specific contribution to make to the future. In this way eco-socialism will acknowledge the heritage of the agrarian socialism of the narodniki, and the ecological and social wisdom of indigenous peoples.

d. The eco-logic of the interconnectedness of all life implies that eco-movements cannot confine themselves either to the wilderness or the rural/agricultural scene, but have also to address the problem of turning urban conglomerations into non-parasitic, viable settlements. We all have to get familiar with the “ecological footprint” of urban conglomerations and search for ways to establish region-wise ecological balances between city and countryside, and worldwide alliances between industrial and agrarian economies.³ The rapid deterioration of urban living conditions may help to convince a growing number of city dwellers that something significant has to be urgently done. But a comprehensive red-green alliance of movements is required to ensure that urban problems are not solved at the cost of the wilderness and/or the countryside, but in cooperation and alliance with communities living there.

2. Eco-Justice

2. a. *The Threat of Eco-Imperialism*

The history of colonialism and ongoing neo-colonialism is one of “ecological barbarism”, as Kate Soper called it.⁴ As the eco-crisis deepens and resources dwindle, relentless competition is likely to lead to increasing poverty, genocide and warfare. Such predictions may sound exaggerated, but global players themselves speak of free market competition as a “merciless economic war”.⁵

Earlier environmental damage was justified in the name, and for the sake of, “development” which was expected to remove mass poverty. Now it happens on account of “inevitable” globalisation. Its supporters try to cover up the ecological costs by promising that competition will promote cleaner technologies and thus higher “eco-efficiency”. Of course, the “advanced” countries and their TNCs will take care of that. They call this “sustainable development”.⁶ But how will the poorer countries pay for it while servicing their new

debts, in other ways than by further exploiting their poor and their natural resources like forests?

Worries about the consequences have led other global planners to speak of the need for "global governance".⁷ They acknowledge that global problems cannot be solved through ruthless competition but require co-operation. Their tendency is to look at it as a matter of "global management". Their computers measure and monitor what is happening to the biosphere, the oceans and the remaining forests. Then they propose measures to be taken. But who are the governors and managers? Who else but those who have the most sophisticated data banks and technologies? And how will the survival needs of local communities be registered and responded to? They have been in the forefront of eco-protection struggles. They neither want TNCs nor global managers. They want Cargill and Monsanto and high-tech deep-sea fishing companies to quit. Their struggle for people's control over resources is at the same time an anti-imperialist and pro-environmental struggle. What they need is the legal protection of livelihood, resources and space, and national and international control over "free" capital.

2. b. The Need for Red-Green Alliances

The question of eco-justice is crucial at all levels: global, national and local. Globally, we have seen how the industrialised North plunders resources from the South and dumps hazardous waste in the South. Such environmental injustices can have a racist dimension as well. Human rights activists in the US formed eco-justice movements when they came across evidence of environmental racism, as most poisonous waste is being dumped in the neighbourhoods of ethnic minorities. Again and again it is seen that environmental harm and health risks are unequally distributed. Dalits are forced to live and work under the most unhealthy conditions. Urban elites and middle-classes put heavy burdens on rural communities around the cities. And the same happens within the rural communities when upper-caste landlords deny access to the resources of land and water to Dalits and women. Thus the struggles for social, racial, economic and gender justice have to link up with the struggles for eco-justice. These movements need to ally with each other to prevent a local victory in one backyard from bringing

more pollution into another. We remember that DuPont was driven out of Goa, but found a place in Tamilnadu. One of the most crucial alliances is that between the traditional workers' movement and the eco-movements. Too often they are at loggerheads.

One of the more spectacular actions of the Earth First Movement took place in the North-West of the US, where members tried to prevent the logging of the last huge area of an ecologically precious "old growth forest". Their activists threw themselves between bulldozers and trees, chained themselves to timber equipment, and formed human barricades by setting their feet in cement-filled ditches. They not only risked their own lives but also those of forest-workers as they drove large nails into trees in order to prevent cutting and processing. For them the workers were "enemies of nature" along with the timber companies and the state. And for the workers and communities whose livelihood came from logging jobs, these radical environmentalists were "people's enemies".⁸ Of course, capital and the state stimulated this division between their two enemies: the environmental movement and the workers' movement. Eco-socialists, on the other hand, argued that the destruction of the forest was not about owls and trees vs. jobs but about eco-systems vs. profits. They pleaded for an alliance of both movements to oppose the complete cutting of trees (as a threat to the environment and permanent jobs for workers), excessive mechanisation, use of chemical weed killers, and export of unprocessed logs. Such an alliance would save both the forest and the jobs of the workers. This is an example of the search for red-green politics which takes into account both people's and nature's needs.

In the US such an orientation has led to movements for "environmental and economic justice", in short eco-justice movements. These have grown in reaction against an environmentalism which does not consider the effects of its actions on people. Richard Moore of SNEEJ (Southwest Network for Environmental and Economic Justice) gives examples of such grassroots movements which take up issues of workers' health and environmental racism.⁹ In India the Chattisgarh Mukti Morcha has been a pioneer of red-green politics.¹⁰ The term "eco-justice", which we use, is another expression for such an integrated agenda of eco-movements and Leftist movements. In

terms of overall orientation, we may speak of “eco-socialism”. This expression is suitable because it is more comprehensive and implies both people’s control over resources and people’s planning as necessary instruments of the struggle for social and ecological justice.

3. Eco-Politics¹¹

a. Eco-politics cannot be confined to politics in the narrow sense of elections and legislature, though it certainly aims at making an impact at those levels too. It starts from the local and involves even the personal. Its primary points of reference are the kitchen, kitchen-garden, neighbourhood, waste-recycling, local watershed, land-use, increase of biomass, means of transport, and so on. It starts where people make conscious choices as consumers about what to buy and what not to buy, and what sort of packaging to accept and what not to accept (plastic!). It happens where people take responsibility for the waste they produce, including human waste. It begins where people change their life-style.

But, of course, eco-politics cannot stop there. And we cannot wait for everybody to behave personally in an eco-conscious way. Initially, it will rather be a minority which is ready to go against the common practice. In order to turn the tide other forms of action have to spread at various levels. An important level is that of civil action in the neighbourhood or village around issues of water, common land use, waste disposal, marketing, etc. Such local initiatives will have to cross the divisions of patriarchy, caste, class, religion and political parties.

Another crucial form of eco-politics is that of people’s campaigns. This is the organisational way in which the local and the regional are connected with the national and even the global. The usual pattern is that local movements, facing powerful destructive interventions of TNCs and the state, call for solidarity support. The NBA and the NFF have done that in exemplary ways. The NAPM, of which the NBA and the NFF are key members, in its turn encourages and facilitates support from all over the country for local struggles. Organisationally, this cuts across the usual political boundaries and structures. The Narmada flows through three states and the NBA operates across these state borders. Similarly the NFF moves from one coastal area to the next and unites fishworkers at the national

level. It is even part of a global solidarity alliance, the World Fishworkers' Forum.

Movements based on mass mobilisation are powerful but difficult to sustain. People have to survive and activists get exhausted. How long can they go on? Global companies with their financial power and the state bureaucracies can tire them out as Arundhati Roy points out.¹² That is why movements need a support structure of sympathisers and supporters in research institutes and the media, and in other areas of civil society. Financial support, legal aid, volunteers, study and documentation services have to come from there.

b. Campaigns and support structures in civil society cut across parties and state boundaries. But ultimately eco-politics cannot avoid the state. Neo-liberal policies may undermine the role of the state and party politics may have abandoned all ideological orientation. Yet, people's struggles have to confront the state in protest on the one hand, and with the demand to change policies on the other. This again starts from the local level. Panchayats are bound to play a crucial role in the attempts to democratise decision-making processes and move towards people's control over resources. Simultaneously, other forms of local organisation are needed, especially where caste and patriarchy block the democratic functioning of panchayats.

At the same time, pressure is needed at the higher levels of govt. Unlike TNCs, govts. have to face their electorate. They may be blindly devoted to their maniacal mega projects. But they cannot go elsewhere when people disapprove. They can thus be pressurised to drop one or the other harmful policy. If the bureaucracy fails to do so, the judiciary may throw a spanner in its work. For this reason, "devolution of power" is not automatically to be welcomed. It may be only a smokescreen for a neo-liberal abandoning of responsibility for the common good. When the Central Govt. leaves it to the States to give environmental clearances, it is not opening the road to democratisation but to TNCs which lure State Govts. with investments that may cause eco-disasters in the long run.

Campaigns for a better legislation to protect precious resources are an important part of eco-politics. A thorough discussion is needed to find out which types of reforms should be pushed by the NAPM

and people's movements to function as stepping stones in the direction of radical transformation. Mohan Rao points at the tax policy as a crucial area. The state could for example be pressurised to use differential taxes to promote public rather than private transport, which would be both eco-friendly and equitable.¹³

c. Politics is about setting priorities. Eco-politics is about challenging the present priorities and projecting eco-friendly, justice-oriented alternatives. It is a long-term battle to win over the minds of people. It means asking persistent questions about "superfluous energy consumption" by air transport, the advertising industry, and auto rallies through the Himalaya or anywhere else.¹⁴ The basic political question is, whose needs should be satisfied first and which wants can wait or be ignored. Indirectly politicians and bureaucrats are forced to recognise this when they try to justify the tremendous expenditure and the social and environmental costs of the Narmada project by saying that it is meant to bring water to the thirsty people of Kutch. It is a lie,¹⁵ but the lie is based on the right assumption that water (first of all, drinking water) is a top priority. If Indian politics would accept that as a priority, everybody's need of water for domestic purposes including food production would be satisfied before allowing sugarcane plantations, car factories and the like to swallow gallons of water. But politicians go on glorying in mega projects like world-class airports. And Chief Ministers get away with enormous tax concessions to car producers, as if more cars were a people's priority and a boon to the environment.

Eco-politics has to sow the seeds for a popular awakening and upsurge which delegitimises the harmful demands of capital for more space for airports and harbours for long-distance trade and so on. For instance, Dutch floriculture companies came to Bangalore and invested in the production of – poisoned – roses for the European market. These were cultivated on land and with water that were earlier used for food crops like ragi. A Dutch minister then came along and said that the airport had to be expanded for the quick transport of such a vulnerable product as roses. People have to raise their voice above the noise of cargo planes to argue for food security for the poor as the first priority. In short, the socially oppressive and ecologically damaging new policies of structural adjustment which force the poor

to adjust to the wants of the rich, have to be replaced by liberative policies which persuade or compel the rich to adjust to the needs of the poor and nature.

In the process of protesting and experimenting, eco-politics has to develop and project alternative policies. It is not enough to oppose nuclear plants. An alternative energy policy has to be evolved. Similarly, alternative industrial, trade and transport policies have to be worked out. These should be based on alliance and co-operation instead of competition. In the area of technology for example, an alliance of old and new technologies should be envisaged which are worker-friendly and eco-friendly. By projecting alternative policies, which have to be worked out in consultation with people and critical-minded experts in various fields, the eco-movement will attract a growing number of citizens who realise that the present policies are not viable.

The struggle for eco-justice through the transformation and reorientation of society is difficult and demanding. People need to share their spiritual resources in order to be able to sustain the movement. The organisational form of an alliance, as in the NAPM, thus gives space for people who draw strength from different religious and secular traditions, to question each other's views, share and be enriched in the process. This should be an antidote to communalist antagonisms and a dogmatic form of secularism which denies the potential of religious traditions to contribute to the search for an alternative society. In living religious traditions as also in many folk traditions, we have access to a treasure-house of memories of practices in traditional society. We cannot return to such a society, but the memories of reciprocity, sharing, co-operation and obligations to the common good can nurture our imagination to find new ways of practicing such values in our eco-socialist project of the future. In any case such traditions can help us to overcome the commodification of life and the destructive despotism of Mammon.

There is the story of an activist Buddhist monk in North-East Thailand who organises forest dwellers against the bureaucracy, military and capital in defense of the forest on which their long-term survival depends. Phra Prajak Khatajitto draws on a communitarian, eco-socialist interpretation of Buddhism based on the principle of the

good of the whole and the interdependence of society, culture and nature, and the values of restraint from personal greed, social equity and generosity, loving kindness and respect for the community.¹⁶

The ecumenical movement, led by the World Council of Churches, has tried to link up some basic concerns which can be expressed in three words: Justice, Peace and Integrity of Creation. In the process of promoting the simultaneous and interlinked pursuit of all three, which has much in common with our perspective of eco-justice, two major insights have emerged. Firstly, this is something which can be and has to be pursued together by people of different religious and secular backgrounds. Secondly, this must be based on strong, lasting commitments.

d. As we are facing so many short-lived, opportunistic alliances of political parties, it should be stressed that the core of people's alliances has to aim at life-long commitments to solidarity, as indeed life is at stake. Of course, there are and will be short-term, tactical alliances in various struggles on particular issues. But basically eco-politics has to aim at co-existence, co-evolution and co-operation as an alternative to destructive competition. Just as urban settlements and regions of wilderness, forest, sea and agriculture have to co-exist and supplement each other, so movements of Adivasis, fisherfolk, peasants, workers and city dwellers have to become allied for life.

At the same time, these movements have to address and bridge their internal social cleavages and conflicts if they want to build up real people's strength and control over resources. That means that at all levels the questions of patriarchy and caste, and of women, Dalits and other discriminated sections have to be taken up. The marxist parties have known that lasting commitments need a strong organisational expression which gives coherence to people's actions. However, the centralising way in which vanguard parties functioned did not leave sufficient space for real democratic participation and finally led to splits rather than unity.

The organisational form of alliances is the most fitting response to the present regime of capital whose power is based on divide and rule policies, competition and fragmentation. At the same time, it opens a way to unite without imposing centralising forms of hierarchy and

leadership which tend to create divisions. Experience however shows that it is a difficult task, requiring a lot of patience and persistence, to sustain and develop linkages between different movements and their constituencies. Only together they can escape from the dangers and traps of co-optation by various status quo oriented forces. This applies in particular to NGOs, which are more easily susceptible to co-optation.

These problems are connected with the constructive dimension of eco-politics. The classical marxist critique of utopian socialism has created a deep skepticism regarding local alternative experiments. That critique is still valid as long as one assumes that to achieve the overall transformation of society is just a matter of multiplying alternative projects. Such an approach ignores the necessity of struggle against the powers that are bound to resist the spreading of successful alternatives, either by co-optation or repression. Such experiments cannot replace the political process and struggles, but they are an important part of them. They are needed as eye-openers, as practical arguments against the widespread, paralysing, fatalistic skepticism which assumes that there are no alternatives. A growing number of people know that the present capitalist civilisation is not viable in the long run. But they are unable to act according to this insight as long as they believe that nothing can be done about it. Such skepticism cannot be broken by the promise that everything will be possible "after the revolution".

Practical experiments have not only this eye-opening, re-orienting function. The struggle against further destruction cannot be postponed till red-green fronts capture political power. Socialism cannot be built in a devastated environment. Whatever can be done now to upgrade eroded soils, introduce sensible water-harvesting methods, save a wide variety of seeds, block crazy mega projects, genetically manipulated crops and so on, is a contribution to the future in which a different type of society will hopefully evolve after long struggles.

The traditional working-class movement used to discuss the relationship between minimum programme and maximum programme, reforms and revolution. The Green Party in Germany is forever on the brink of splits because the "fundamentalist" wing opposes the political compromises of the half-hearted reforms which the "realistic"

greens support, arguing that half measures are better than no measures at all.¹⁷ It appears from these conflicts that both are needed: radical movements and alliances with a radical perspective, and parties which do what is possible for the time being in terms of reforms.

The blindness of the rulers may make us think that a red-green radical project is utopian. However, it is more "utopian" in the sense of impossible, to think that things can go on for long in the present direction. Awareness is growing regarding the seriousness of the eco-crisis and other crises facing us. As the warning predictions of ecologists are confirmed over time, more and more people will start looking for the political expression of their concerns. It is increasingly visible that the eco-crisis is having a growing impact on people's social and economic life and is resulting in more and more social disruption and armed conflicts. This highlights the need for old and new social movements to come together, and for leftist parties to turn red-green and link up what has been liberative in the history of workers' struggles and visions with the affirmation of life in the eco-struggles. Already it is happening here and there. I think of the recent story of the dockers of Liverpool which was hardly recorded by the press.¹⁸ These dockers who were sacked in 1995, replaced by casual labour, and let down by the official trade union which accepted the new anti-labour laws, found unexpected support from women who started picketing the harbour, dockers in 105 ports around the world, the local public and environmental activists. The latter remembered that the Liverpool dockers had refused to unload toxic waste and now came to their support under the slogan "Reclaim the Future".

At times we may become desperate at the disarray and decay of political life and the lack of political organisations with a vision and commitment to support people's struggles for survival by working for a transformation and reorientation of society. But this sense of being in a political desert is no excuse for anybody not to respond to the mounting ecological, social and economic crisis. All of us can indeed take small steps in the alternative direction and become progressively involved in the struggle for eco-justice, inspired by the hope and conviction that spaces will open up for the radical reorientation and transformation which is needed.¹⁹

NOTES

Chapter I

1. *The State of India's Environment 1984-85*, The Second Citizens' Report (New Delhi, CSE, 1985), p. 123 ff.
2. Ibid., p. 131 on "Wheels of Progress".
3. Regarding the increase of cancer and its causes, see the cover story of *The Ecologist Asia*, May-June 1998.
4. CSE, 41 Tughlakabad Institutional Area, New Delhi, 110 062, (Rs 75).
5. See the cover story of *Down to Earth*, Nov. 15, 1996. *Down to Earth* often returns to this issue. See also the recent cover story on "Air Pollution" of *Health for the Millions*, Feb. 1999.
6. See *Down to Earth*, 15.3 and 15.8.1997, and the cover story, "Diesel Engines of the Devil", 13.5.1999.
7. *The Hindu*, Survey of the Environment 1997, p. 54 ff
8. *Second Citizens' Report*, p. 136. See also the cover story on "Acid Rain", *Down to Earth*, May 15, 1999.
9. Arjun Makhijani et al., "Ozone Depletion: Cause and Effects" in *EPW*, 10.3.1990.
10. "Crisis? What Crisis? The Ozone Backlash", *The Ecologist Asia*, Vol. 3, No. 3, May-June 1995.
11. See the article on amendments to the Montreal Protocol, "Widening the Gap", in *Down to Earth*, Oct. 31, 1997.
12. Maliko Kumar reports about climate-friendly non-CFC technology for refrigerators in *Down to Earth*, June 30, 1996, p. 22 f.
13. For more details, see *World Resources 1994-95*, a Report by the World Resources Institute in collaboration with the UNEP and the UNDP (Delhi, OUP, 1995), ch. 11, "Atmosphere and Climate".
14. *World Resources*, op. cit., p. 201.
15. Devendra Chauhan, "2100, An Indian Cataclysm" in *Down to Earth*, July 31, 1994.
16. Tan Cheng Li, "Flaws in the Kyoto Protocol", *Third World Resurgence*, No. 89, Jan. 1998. See also the highly critical analysis of Anil Agarwal, "Kyoto's Ghost Will Return", in *Down to Earth*, Jan. 15, 1998. For a

- further analysis of post-Kyoto politics, see *Down to Earth*, July 31 and Aug. 15, 1998. Anil Agarwal reports on the follow-up meeting in Buenos Aires in *Down to Earth*, Dec. 15, 1998. Also, "Gambling with the Climate" in *Third World Resurgence*, No. 99, Nov. 1998.
17. Primo Levi, *The Periodic Table*. The author is an Italian Jew who survived the Auschwitz camp, where the Nazi system manufactured the mass murder of Jews with the help of deadly gases such as Zyklon B produced by the chemical industry.
 18. For the examples of GRASIM in the Chambal valley and Mavoor/Kerala, see Desrochers/Wielenga/Patel, *Social Movements* (Centre for Social Action, Bangalore, 1991), pp. 89-90.
 19. Anju Sharma/Rajat Banerji, "The Blind Court" in *Down to Earth*, April 30, 1996.
 20. See *Toxic Waste Trade*, a Primer by the Public Interest Research Group (Delhi, 1994). On toxic waste import, see also the cover story "Poisons over Poverty", *From the Lawyers' Collective*, Oct. 1997.
 21. Ravi Agarwal, "Death Docks – Ship-breaking in India" in *TL News* No. 4, June 1998, publ. by Toxics Link (New Delhi 110 001, ph. 11332 8006), and also the special report in *Down to Earth*, March 15, 1998.
 22. Jum Puckett (Greenpeace), "The Basel Ban, A Triumph over Business-as-usual" in *The Ecologist Asia*, March-April 1997. This article tells the story leading to the 1994 Ban.
 23. *Ibid.*, p. 7.
 24. Ann Leonard, "India and the International Waste Trade" in *The Ecologist Asia*, March-April 1997, and "The Way of all Waste" in *Down to Earth*, March 31, 1998.
 25. *The Ecologist*, *ibid.*, p. 17.
 26. "Plastic Peril", *Frontline*, July 14, 1995.
 27. Quoted in B. Edwards/D. Santillo, "The Stranger, The Chlorine Industry in India" in *The Ecologist Asia*, Vol. 5, No. 2, March-April 1997.
 28. "Chemical Industry Defends Chlorine" in *Third World Resurgence*, 72-73 (1996).
 29. Edwards/Santillo, *The Stranger*, op. cit.
 30. Anil Agarwal, "Facing a Silent Spring, Pesticides and Ecological Devastation and Cancer, The Story of an Environmental Victim" in *Down to Earth*, Nov. 30, 1996.
 31. See the extensive article of Anil Agarwal in *Down to Earth*, Dec. 15, 1996, p. 27 ff.

32. See the special report, "Abetment to Suicide" in *Down to Earth*, Feb. 28, 1998.
33. David Bull, *A Growing Problem, Pesticides and the Third World Poor* (Oxford, Oxfam, 1982), p. 43 f.
34. See Ruth Norris, *Pills, Pesticides and Profits, The International Trade in Toxic Substances* (New York, 1984).
35. Aparna Viswanathan, "Pesticides: From Silent Spring to Indian Summer" in *EPW*, Aug. 31, 1991.
36. See Michael Hansen, *Escape from the Pesticide Treadmill, Alternatives to Pesticides in Developed Countries* (Penang, IOCU, 1988); and K. Vijayalakshmi (ed.), *Biological Methods of Pest Control* (Chennai, PPST Foundation, 1988).
37. Figures are given in *World Resources*, op. cit.
38. J. Rifkin, *Entropy* (New York, 1980) speaks of a fundamental watershed in energy use. I follow the reflections of Elmar Altvater in E. Altvater/B. Mahnkopf, *Grenzen der Globalisierung* (Muenster, 1997), ch. 14.
39. See our Ch. III, C 1.
40. *The State of India's Environment 1982* (New Delhi, CSE, 1982), ch. 3 on Forests.
41. See the critique on the State of Forest Report 1995 in *Down to Earth*, Sept. 30, 1996, p. 19.
42. See Madhav Gadgil/Ramachandra Guha, *Ecology and Equity* (New Delhi, Penguin, 1995), ch. 7, p. 155.
43. Pallava Bagla and Subhadra Menon (eds.), *Ravaged Forests and Soiled Seas* (Kalpavriksh, Jan. 1989), sponsored by Ministry of Environment and Forests, p. 4 f.
44. For further discussion, see G. Dietrich/B. Wielenga, *Towards Understanding Indian Society* (Madurai, 1998-2), p. 230 ff.
45. *World Resources 1994-95*, op. cit., Ch. 8.
46. CSE, *Second Citizens' Report*, op. cit., pp. 229 ff.
47. "Where are all the Pollinators going?", cover story of *Down to Earth*, Aug. 15, 1998.
48. Navdanya team, *Cultivating Diversity*, Report No. 1, Research Foundation for Science, Technology and Natural Resource Policy, 105 Rajpur Rd., Dehradun, U.P., 248 001, p. 4 ff.
49. Vandana Shiva, "The Enclosure of the Commons" in *Third World Resurgence*, No. 84, Aug. 1997. The cover story of this issue is on

Community Rights Vs. Corporations.

50. For details, see the cover story of *Third World Resurgence*, No. 65-66, Jan.-Feb. 1996.
51. Lester R. Brown, *State of the World 1990*, a Worldwatch Institute Report on Progress Toward a Sustainable Society (New York, 1990), p. 60 f. According to a recent estimate, 16% of the global cropland has been lost due to erosion during the last 10 years. See "Landing in Trouble", *Down the Earth*, 31.10.1996.
52. See *First and Second Citizens' Report* of CSE, op. cit., chs. 1 on Land.
53. See Martin Khor, "Land Degradation" in *Third World Resurgence*, No. 67, March 1996.
54. "Landing in Trouble", op. cit., *Down to Earth*, 31.10.1996.
55. See the cover story on "The Aquaculture Disaster" in *The Ecologist Asia*, Sept.-Oct. 1995 and also Interview with John Kurien in *Down to Earth*, March 31, 1994.
56. See "Landing in Trouble", op. cit.
57. See Anita Pleumarom, "Course and Effect, Golf Tourism in Thailand" in *The Ecologist Asia*, March-April 1994.
58. *Frontline*, Jan. 5-18, 1991.
59. Sandra Postel, *Last Oasis, Facing Water Scarcity*, Worldwatch Institute (New Delhi, Horizon India Books, 1992), p. 28.
60. *Ibid.*, p. 19.
61. Rustam Vania, "Pulicat Lake, The Salt of the Earth" in *Down to Earth*, Dec. 31, 1993.
62. See C. Ramachandraiah, "Weather and Water in Urban Areas" in *EPW*, Oct. 25, 1997.
63. See Interview with Uno Winblad in *Down to Earth*, 15.1.1996, and Abby A. Rockefeller, "Civilization and Sludge: Notes on the History of the Management of Human Excreta", in *Capitalism Nature Socialism*, Vol. 9 (3) Issue 35, Sept. 1998.
64. See the analytical article by K.B. Thakur, "That Sinking Feeling", in *Down to Earth*, 30.6.1995.
65. See *The State of India's Environment 1982*, op. cit., ch. 2 on Water.
66. See *The Second Citizens' Report*, op. cit., on Water, p. 27-48.
67. See Anna-Rosa Martinez, "Engineering the Blue Revolution" in *Samudra Report*, No. 20, May 1998 (International Collective in Support

of Fish Workers).

68. "Chemical Industry Defends Chlorine" in *Third World Resurgence*, No. 72-73 (1996).
69. For details and explanations see Rosalie Bertell, *No Immediate Danger, Prognosis for a Radioactive Earth* (London, The Women's Press, 1985); and also T. Shivaji Rao, *Nuclear Plants – The Silent Killers* (Hyderabad, Navya Bharathi Publ. 1989).
70. See Surendra Gadekar, "Decommission Tarapur" in *The Ecologist Asia*, Vol. 3, No. 3, May-June 1995.
71. Vladimir Chernousenko, "We Shall be Killed in Silent Ways", in *Third World Resurgence*, No. 69, May 1996. The author supervised the clean-up and was dying of cancer when he wrote this article.
72. "Chernobyl Impasse Solved..." in *Down to Earth*, April 30, 1996.
73. "In Focus", *Down to Earth*, July 31, 1996, p. 12.
74. "Cancer and 'Risk-free' Radiation" in *The Ecologist Asia*, May-June 1998.
75. Jan.-Feb. 1998.
76. See the statement from the International Conference on "Redefining the Life Sciences", held in July 1994 in Malaysia, in *Third World Resurgence*, No. 53-54, Jan.-Feb. 1995, pp. 16-24.
77. Vandana Shiva, "Why the Engineering Paradigm in Life-Forms is Flawed", in *Third World Resurgence*, No. 53-54, p. 25 ff.
78. Ricarda A. Steinbrecher, "From Green to Gene Revolution, The Environmental Risks of Genetically Engineered Crops" in *The Ecologist Asia*, Vol. 5, No. 3, May-June 1997, p. 14. See also: "The Hazards of Genetically-Engineered Foods" in *Third World Resurgence*, No. 75, Nov. 1996, and the cover story on the same in Nr. 79, March 1997. An excellent guide is Brewster Kneen, *Farmageddon, Food and the Culture of Biotechnology* (Gabriola Island, New Society Publishers, Canada, 1999).
79. Jinney Mathew, "How Good are Genetically Altered Organisms", in *Science Express (IE)* 15.4.1998.
80. *Monsanto Peddling "Life Sciences" or "Death Sciences"?* Publ. by Research Foundation for Science, Technology and Ecology, New Delhi, 1998.
81. "High-tech Piracy" in *Third World Resurgence*, No. 71, July 1996.
82. "Broadest religious coalition in US history opposes life patenting" in *Third World Resurgence*, No. 63, Nov. 1995, p. 28.

83. R.J. Lifton, *The Broken Connection* (New York, 1983).
84. See G. Muller-Fahrenholtz, *God's Spirit, Transforming a World in Crisis* (New York/Geneva, 1995), ch.12 on Violence.
85. Ibid., p. 77.
86. "The End of Imagination" in *Frontline*, Aug.14, 1998.
87. About the logic of capital accumulation, see R. Heilbroner, *The Nature and Logic of Capitalism* (New York, 1986) and G. Dietrich/B. Wielenga, *Towards Understanding Indian Society* (Madurai, 1998-2), p. 92 ff.

Chapter II

1. Madhav Gadgil/Ramachandra Guha, *Ecology and Equity, The Use and Abuse of Nature in Contemporary India* (New Delhi, 1995), p. 4 f.
2. See Vimla Bahuguna, "The Chipko Movement" in Ilina Sen (ed), *A Space Within the Struggle, Women's Participation in People's Movements* (New Delhi, Kali for Women, 1990), p. 117.
3. See Maria Mies/Vandana Shiva, *Ecofeminism* (London, 1993), ch.11.
4. Ibid., p. 168 f.
5. See Wielenga in Desrochers/Wielenga/Patel, *Social Movements* (Centre for Social Action, Bangalore, 1996), p. 89 ff. & 108 f.
6. See the annual "State of the World" reports and "World Watch Papers", publ. from Washington and New Delhi (A-12 Sujana Sing Park), and the publications of the Centre for Science and Environment, New Delhi, esp. *Down to Earth*.
7. Written by Christopher Flavin and John E. Young in *State of the World 1993*, Indian Edn., Horizon India Books, 1993, ch.10.
8. Mahesh Rangarajan, "The Politics of Ecology. The Debate on Wildlife and People in India, 1970-95", *EPW*, Special No., 1996, p. 2391.
9. See B. Wielenga, *Social Movements*, op. cit., p. 85-87.
10. "The Authoritarian Biologist and the Arrogance of Anti-Humanism, Wildlife Conservation in the Third World", in *The Ecologist Asia*, July 15, 1997.
11. See Rangarajan, op. cit., 2396 f.
12. See J. Donald Hughes, "Sacred Groves and Community Power" in *Capitalism Nature Socialism*, Dec. 1997.
13. See Anil Agarwal/Sumita Narain, *Towards Green Villages, A Strategy for Environmentally Sound and Participatory Rural Development* (New Delhi, CSE, 1989); Robert Chambers/N.C. Saxena/Tushaar Shah,

To the Hands of the Poor, Water and Trees (New Delhi, 1989); and Subi Sinha/Ronald Herring, "Common Property, Collective Action and Ecology", in *EPW*, July 3-10, 1993.

14. See Rangarajan, op. cit., p. 2401 & 2403.
15. See e.g. The Joint Statement of the Consultation on Wildlife Conservation and People's Livelihood Rights: Building Bridges (April 10-12, 1997) in *The Ecologist Asia*, May-June, 1997.
16. See Bharat Dogra, *The Life and Work of Dr. R.H. Richharia* (New Delhi, 1991).
17. Claude Alvares, "The Great Gene Robbery", *Illustrated Weekly*, March 23, 1986.
18. See his rejoinder to Alvares, "No Robbery, Saving and Sharing of Genetic Resources" in *Illustrated Weekly*, June 29, 1986.
19. For the discussion in the 1980s, see Pat Roy Mooney, "The Law of the Seed" in *Development Dialogue* 1983:1-2, and the responses in *Development Dialogue* 1985:1. For an overall discussion, see Ruth McNally/Peter Wheale, "Biopatenting and Biodiversity, Comparative Advantages in the New Global Order", in *The Ecologist Asia*, July 15, 1997. See further, Vandana Shiva, "Farmers' Rights, Biodiversity and International Treaties" in *EPW*, April 3, 1993; Vandana Shiva in *EPW*, June 22, 1996; and on turmeric, *Down to Earth*, Sept.30, 1997.
20. See e.g. *The Hindu* of 11.5.1998, "CPI(M) Wants Centre to Oppose Biopiracy".
21. See Madhav Gadgil/P. R. Seshagiri Rao, "Battling over biodiversity, Changing the rules of the game", in *The Hindu* (Magazine), 14.6.1998.
22. See M.S. Swaminathan Research Foundation, Centre for Research on Sustainable Agricultural and Rural Development, Chennai, *Eighth Annual Report 1997-98*.
23. M.S. Swaminathan, "Urgent Tasks for Parliament" in *The Hindu* 19 & 20.3.1998.
24. For another approach to legislation, see P. R. Seshagiri Rao/Madhav Gadgil, "People's Bill on Nature, Health and Education" in *EPW*, Oct. 7, 1995.
25. See Brewster Kneen, "The Invisible Giant, Cargill and its Transnational Strategies" in *The Ecologist Asia*, May-June 1996; Vandana Shiva, "The Corporatisation of Indian Agriculture and the Response of the Farmers' Movement" in *The Ecologist Asia*, July-Aug. 1996; and Public Interest Research Group, *Cargill Bitter Salt*, 1993.

26. M.S. Swaminathan, "An Agenda for Food Security", *The Hindu*, 13.1.1998.
27. See previous ch. and P. Balakrishna (of MSSRF), "Infamous Invention" in *The Hindu*, 19.7.1998, and M.S. Swaminathan, "Giving the Farmer his Due" in *The Hindu*, 23.8.1998.
28. For extensive information on Intellectual Property Rights, issues and debates, see *Social Action*, Oct.-Dec. 1998.
29. See the "Manifesto, People's Global Action", *Lokayan Bulletin*, 14.5.1998.
30. Anil Agarwal/Sunita Narain, *Towards Green Villages*, op. cit., p. viii, Note 13.
31. Ibid., p. vi f.
32. For a more detailed discussion of the difference between movements and NGOs, see Dietrich/Wielenga, *Understanding Indian Society*, op. cit., p. 54 f. & 159 ff.
33. See for this and the following, Eva Cheung Robinson, *Greening at the Grassroots, Alternative Forestry Strategies in India* (New Delhi, Sage, 1998), quote from p. 15.
34. See Gadgil Madhav/Ramachandra Guha, *This Fissured Land: An Ecological History of India* (New Delhi, OUP, 1993) p. 190 ff.
35. See Gadgil/Guha, op. cit., p. 186 ff.
36. Only recently joint management has been attempted in W. Bengal, see Dietrich/Wielenga, op. cit., p. 233.
37. See Robinson, op. cit. p. 26 ff. where exceptional successes are also discussed.
38. This has been analysed by Vandana Shiva, *Staying Alive: Women, Ecology and Development* (London, 1989), and Ramachandra Guha, *The Unquiet Woods* (Delhi, 1990).
39. See Robinson, op. cit., ch. 3.
40. Robinson, *Greening at the Grassroots*, op. cit., p. 89 ff.
41. Ibid., p. 96.
42. K.R. Datye et al., *Banking on Biomass, A New Strategy for Sustainable Prosperity Based on Renewable Energy and Dispersed Industrialisation* (Ahmedabad, Centre for Environment Education, 1997).
43. See Anant Phadke, "Anti-Drought Movement in Sangli District", in *EPW*, Nov. 26, 1994; and also Dietrich/Wielenga, op. cit., p. 220 ff.

44. Datye, op. cit., p. 58.
45. Ibid., p. 83.
46. For other reports on watershed management, see e.g. Sheena, Gandhi Peace Foundation, *Ripples of the Society, People's Movements in Watershed Development in India* (New Delhi, 1998) and Anil Agarwal, "On the Path to Green Wealth" in *The Hindu* 11.10.1998.
47. Jean-Marc Ela, "Western Development has Failed, Looking to a new Africa" in *Le Monde Diplomatique*, Oct. 1998.
48. R. Douthwaite, *Short Circuit, Strengthening Local Economies for Security in an Unstable World* (Dublin, Liliput Press, 1996).
49. See Cary Fowler and Pat Mooney, *Shattering: Food, Politics and the Loss of Genetic Diversity* (Tucson, USA, 1990).
50. See Vandana Shiva, Vanaja Ramprasad, *The Seed Keepers* (Research Foundation for Science, Technology and Natural Resource Policy, Delhi, 1995).
51. See for further discussion Brewster Kneen, *From Land to Mouth* (Canada, 1991) and the monthly newsletter publ. by him and Kathleen Kneen from Canada, and distributed in India, *The Ram's Horn*.
52. Andrew Rowell, *Green Backlash, Global Subversion of the Environmental Movement* (London, Routledge, 1996), ch. 8.
53. Ibid., ch. 6.
54. See press reports, Narmada Newsletter and Ch. III A 2.

Chapter III

1. Ramachandra Guha, *The Unquiet Woods, Ecological Change and Peasant Resistance in the Himalayas* (Delhi, OUP, 1989).
2. Ibid., p. 33.
3. Ibid., ch.3, cf. Vandana Shiva, *Staying Alive: Women, Ecology and Survival in India* (New Delhi, 1988), chs. 2 & 4.
4. Guha, op. cit., p. 32.
5. Ibid., p. 145.
6. This is to be attributed to the untiring efforts, writings and interviews of some of its leaders such as Sunderlal Bahuguna and the scholarly cum activist publications and presentations of Vandana Shiva and others.
7. Op. cit., chs. 4, 5 & 7.
8. Ibid., p. 171.

9. Ibid., p. 135, quoting Zapata (Mexico).
10. See Vimala Bahuguna, "The Chipko Movement" in Ilina Sen (ed), *A Space within the Struggle, Women's Participation in People's Movement* (New Delhi, 1990), p. 111-124.
11. Guha, op. cit., p. 177.
12. See Edward Goldsmith/Nicholas Hildegard, *The Social and Environmental Effects of Large Dams* (Sierra Book Club, 1984), reviewed by Jashbhai Patel, *The Myths Exploded, Narmada Project*, Mumbai, NBA, 1994.
13. Madhav Gadgil/Ramachandra Guha, *Ecology and Equity* (Penguin India, 1995), p. 68 ff.
14. *Environment Aspects of the Sardar Sarovar Project*, A Kalpavaikash Publ., 1994.
15. Baba Amte, *Cry the Beloved Narmada* (Anandwan, 1989), and *The Case Against the Narmada Project and the Alternatives Perspective* (Anandwan, 1990).
16. For a detailed narrative and analysis of the history of the protest movement, see Narmada Bachao Andolan (Sanjay Sangvai), *The River and the Life, The People's Struggle in Narmada Valley* (Baroda, NBA, B-13, Shivam Flats, Ellora Park, 390 007, 1998).
17. Ibid., p. 24 ff.
18. *Sardar Sarovar, Report of the Independent Review*, presented by Bradford Morse, Chairman and Thomas Berger, Deputy Chairman, publ. by NBA, 1992, 1984), reviewed by Jashbhai Patel, *The Myths Exploded*, op. cit.
19. See e.g. Pravin N. Sheth, "The Sardar Sarovar Project: Eco-politics of Development" in Upendra Baxi/Bhiku Parekh (eds), *Crisis and Change in Contemporary India* (New Delhi, Sage, 1995), ch. 18.
20. *The River and the Life*, op. cit., p. 35.
21. Ibid., p. 37.
22. Suhas Paranjapye/K.J. Roy, *The Alternative Restructuring of Sardar Sarovar Project*.
23. Pravin, Sheth, op. cit.
24. See "The Strength of a People's Movement, Medha Patkar in conversation with Dunu Roy and Geeti Sen" in Geeti Sen (ed), *Indigenous Vision, Peoples of India, Attitudes to the Environment*, (New Delhi, Sage, 1992), pp. 273-299.

25. Ibid., p. 282.
26. Quoted by Pravin Seth, op. cit. p. 411.
27. Jan Vikas Andolan, "A Draft Perspective and Some Questions" in *Lokayan Bulletin*, 8:1, Jan.-Feb. 1990, pp. 69-73.
28. Karl Wittfogel, *Oriental Despotism: A Comparative Study of Total Power* (New Haven, 1957).
29. See B. Wielenga, *Marxist Views on India in Historical Perspective* (Chennai, CLS, 1976).
30. See David Hardiman, "Small-Dam Systems of the Sahyadris" in David Arnold/Ramachandra Guha, *Nature, Culture, Imperialism, Essays on the Environmental History of South Asia* (Delhi, OUP, 1995), ch. 6.
31. Ibid., p. 208.
32. John Kurien, *Towards a New Agenda for Sustainable Small-Scale Fisheries Development* (South Indian Federation of Fishermen Societies, 1996).
33. See *Struggle to Survive*, a dossier on the Struggle of Traditional Fishermen in India, compiled by ISI and Delhi Forum, New Delhi, 1987.
34. See the Souvenir of the March and the documentation under the title "Breakthrough despite Break-up", both published by NFF (XXIII/2127, Cochin-682006, Kerala), cf. Gabriele Dietrich, "Kanyakumari March: Breakthrough Despite Break-up" in *EPW*, May 20, 1989.
35. See Leela Gulati, "Fisherwomen in Kerala, The Impact of New Technologies on their Lives" in *Manushi* No. 21, March-April 1984; Patricia Kuruvinkunnel, "Fire on the Seashore, Struggles of Fisherwomen in Kerala" in *Manushi* No. 37, Nov.-Dec. 1986; and Aleyamma Vijayan, "Struggling with Hope: The Story of Women Fish Vendors of South Kerala" in *Manushi* No. 61, Nov.-Dec. 1990.
36. See Samudra Dossiers, Women in Fisheries Series, especially no. 3, "Women for Sustainable Fisheries", by Nalini Nayak (programme coordinator). See also the Evaluation Report by Gabriele Dietrich, "Without Women in Fisheries, No Fish in the Sea".
37. John Fernandez, *Artificial Fish Habitats, A Community Programme for Biodiversity Conservation*, publ. by Fisheries Research Cell, PCO, Thiruvananthapuram, 1994.
38. ICSF publishes *Samudra* (27 College Road, Chennai 600 006), cf. also its report on South Asia Management, Chennai 1996.
39. "Reservoirs of Hope, Fishermen take the Initiative in Central India" in DEEP, Development Education Exchange Papers, Oct. 1995.

40. See e.g. B. Subramaniam about the paader system in some Tamil fishing villages, "Community-based fishery management, Fishing by Turns" in *Samudra Report*, May 1998.
41. About Cargill, see Brewster Kneen, *Invisible Giant* (Pluto Press, 1995), cf. a summary in *The Ecologist Asia*, May-June 1996. About the KRSS campaign, see *Public Interest Research Group*, "Seeds of Protest", Jan. 1993 and *Frontline*, "Cargill Controversy", Oct. 22, 1993.
42. See Vandana Shiva, "The Corporatisation of Indian Agriculture and the Response of the Farmers' Movement", in *The Ecologist Asia*, July-Aug. 1996. See also Vandana Shiva/Ashok Emani/Afsar H. Jafri, "Globalisation and Threat to Seed Security" in *EPW*, March 6-13, 1999.
43. Navdanya, *Save Our Seeds* (A-60, 2nd floor, Hauz Khas, New Delhi, 110 016).
44. See *Bija the Seed*, a quarterly monitor on Biodiversity, Biotechnology and Intellectual Property Rights (address as in the previous note).
45. Rahul and Jacob Nellithanam, "Return of the Native Seeds", *The Ecologist Asia*, Jan.-Feb. 1998.
46. Claude Alvares, "An Indian Village Bucks GATT over Control of Genetic Resources" in *Third World Resurgence*, No. 84, Aug. 1997.
47. See the cover story in *Third World Resurgence*, No. 65-66, Jan.-Feb., 1996. About the setback in 1999, see No. 104-105, April-May 1999.
48. See The Story of US radio-journalists Steve Wilson and Jam Akre who were sacked after they brought out a critical report on Monsanto, in *Adbusters*, Winter 98.
49. Andrew Rowell, *Green Backlash, Global Subversion of the Environmental Movement*, op. cit.
50. Vandana Shiva, *Mustard or Soya? The Future of India's Edible Oil Culture* (Navdanya, Oct. 1998).
51. See the warning against these beans in *The Guardian Weekly* of Sept. 28, 1997, George Monbiot, "Watch Those Beans", and Indira Khurana, "A Bean Full of Problems" in *Down to Earth*, May 15, 1998 with information about the Soyabean-Roundup Ready of Monsanto.
52. See Samjoy Hazairika, *Bhopal, The Lessons of a Tragedy* (Penguin Books India, 1987); Ward Morehouse/M. Arun Subramaniam, *The Bhopal Tragedy, A Preliminary Report for the Citizens Commission on Bhopal* (Council on International and Public Affairs, New York, 1986); T.R. Chouhan and others, *Bhopal: The Inside Story, Carbide Workers Speak Out on the World's Worst Industrial Disaster* (The Other India Press,

Goa, 1994).

53. "The Bhopal Legacy, An Interview with Dr. Rosalie Bertell" in *Third World Resurgence*, July 1997, p. 18. An MP govt. report stated that only 19 people were totally disabled, cf. Amrita Basu, "On the Tenth Anniversary of the Bhopal Disaster" in *Bulletin of Concerned Asian Scholars*, Jan.-June 1994, p. 7.
54. Op. cit., p. 20.
55. Op. cit., p. 151 ff.
56. Ibid., p. 14.
57. Ward Morehouse, "Unfinished Business, Bhopal Ten years After" in *The Ecologist Asia*, Nov.-Dec. 1994, and Amrita Basu, "On the Tenth Anniversary...", op. cit.
58. See Amrita Basu, op. cit. About the medical aspect of women's suffering and protest, see Madhu Kiswar's interview with Dr. Mira Sadgopal of Zahrili Gas Kand Sangharsh Morcha in *Manushi*, Nr. 29, July 1985.
59. Hazarika, op. cit., p. 15.
60. Praful Bidwai, "Social Implications of the Bhopal Catastrophe" in *Social Action*, Oct. 1985.
61. Hazarika, p. 186
62. Op. cit., p. 365.
63. See Dharendra Sharma, *India's Nuclear Estate* (New Delhi, 1983), cf. also, BIRLA Institute of Scientific Research, *India and the Atom*.
64. See Rosalie Bertell, *No Immediate Danger, Prognosis for a Radioactive Earth* (London, 1985).
65. *Anumukti*, A Journal devoted to Non-nuclear India, Sampoorana Kranti Vidyalaya, Vedchhi, 394 641 (02625-22074). For *Health Survey Rawatbhata*, see Vol. 6, No. 5, April 1993.
66. See Praful Bidwai, "The Kaiga Story" in *EPW*, 3.1.1987.
67. See *Anumukti* Vol. 5 Nr. 5, April-May 1992.
68. See the papers of the National Workshop on Nuclear Power Projects with specific reference to Kaiga (Bangalore, 10-11 Dec. 1988).
69. See *Anumukti*, Vol. 5 No. 5, April-May 1992. About Kerala, see D. Surendranath/K. Ramachandran, "Kerala Say 'No' to Nuclear Power" in *Safe Energy and Environment* (Calcutta), Jan. 1992 (28 Nazrul Park, P. O. Aswininagar, Calcutta 700 059).
70. Surendra Gadekar, "Uranium Mining in Jharkhand" in *Safe Energy and Environment*, Oct. 1991.

71. "Flood Waters Drown Kakrapar" in *Anumukti*, June-July 1994.
72. "Can we Afford Narora?" in *Anumukti*, Aug. 1988.
73. "The Dome of Death" in *Anumukti*, June-July 1994.
74. See *Down to Earth*, Sept. 15, 1995 about accidents at Tarapur (Nucleus of Disaster), cf. Surendra Gadekar, "Decommission Tarapur" in *The Ecologist*, May-June 1995, and "The Narora Fire" in *Frontline*, May 7, 1993, cf. *Anumukti*, June-July 1993.
75. See e.g. V.T. Padmanabhan, "Radioactive Waste Disposal at IRE" in *EPW*, 28.2.1987 and 7.3.1987, cf. "Burying Nuclear Waste" in *Frontline*, 20.1.1990.
76. *Anumukti*, April 1990, p. 9.
77. *Anumukti*, Vol. 7, No. 2, Oct.-Nov. 1993, cf. Padma Prakash, "Some Issues Related to Health Hazards" in *Lokayan Bulletin*, 7:2, March-April 1989, and "Nuclear Technology and Health" in *Socialist Health Review*, Vol. 4, 4, March 1987.
78. Darryl D'Monte, *Temples or Tombs? Industry Vs Environment, Three Controversies* (New Delhi, CSE, 1985).
79. Gary Cohen/Satinatha Sarangi, "People's Struggles Against DuPont in Goa", in *EPW*, April 1, 1995.
80. *Ibid.*, p. 179.
81. For a detailed documentation, see Claude Alvares (ed), *Unwanted Guest, Goans vs DuPont* (Mapusa, The Other India Press, 1991). Compare for this and other struggles: Jed Greer/Kavaljit Singh, *TNCs and India, An Activists' Guide to Research and Campaign on Transnational Corporations* (Delhi, Public Interest Research Group).
82. For details see Dr. Subodh Wagle, *The Enron Story: Controversial issues and the struggle* (PRAYAS, Pune, 1997), (Fax: 0212-331250 Attn. #341230). See also Winin Pereira, Subhash Sule and Abhay Mehta, "The DPC Reserve, Where People are Subservient to Power" in *The Ecologist Asia*, Nov.-Dec. 1994.
83. The research organisation Prayas, based in Pune, has critically evaluated the deal. For excerpts see Wagle, *The Enron Story*, op. cit., pp. 43 ff.
84. Pereira, op. cit., p. 6.
85. "Enron: 'Power' Struggles" in *From the Lawyers' Collective*, May 1997.
86. *Ibid.*, p. 29 ff.
87. Praful Bidwai, "A Disappointing Verdict, The Supreme Court and the Enron Case" in *Frontline*, May 30, 1997.

88. "Greens up in Arms in Karnataka, Against Polluting Industries", in *Frontline*, 23.2.1996; and "Green Signal for Green Destruction" in *From the Lawyers' Collective*, Feb.-March 1998.
89. *The Hindu*, 26.4.1998.
90. Jeffrey Kluger, "The Suicide Seeds" in *Time*, Feb.1, 1999.
91. *New Indian Express*, April 6, 1999.
92. Manju Sharma of the Dept. of Biotechnology quoted in "Sound and Fury" in *Down to Earth*, Jan.31, 1999. See also the cover story on "Terminator Technology" in *Third World Resurgence*, Sept. 1998.
93. Ibid. For regular reports about genetic engineering and corporate policies, see *The Ram's Horn*, publ. by Brewster and Kathleen Kneen (S-12, C-11, R.R.#), Sorrento, B.C. VOE 2WO, Canada).
94. See Mac-Wan Ho, "The Biotechnology Bubble" in *The Ecologist*, Nov.-Dec. 1998.
95. "Scientists Stand by GM Warming" in *Guardian Weekly*, 14.3.1999, cf. also 28.2.1999, p. 9.
96. G. Monbiot, "Feed Truth, Not GM Crops to the Public" in *Guardian Weekly*, 21.2.1989 (cf. also p. 1).
97. *Guardian Weekly*, 28.2.1999. The same article reports that Monsanto was fined 17,000 pounds for failing to prevent the spread of pollen to non-GM crops.
98. See the cover story of *Third World Resurgence* No. 104-105, April-May 1999, "Collapse at Cartagena, US Torpedoes Biosafety Protocol".
99. See e.g. "Environment Versus Development" in *Anumukti*, Dec. 1993.
100. See A.K.N. Reddy, "Reflections of a Maverick" in *Seminar*, No. 409, Sept. 1993.
101. N. Georgescu-Roegen, *The Entropy Law and the Economic Process* (London, 1981); and J. Martinez-Alier, *Ecological Economics: Energy, Environment and Society* (New York, 1987). For a popular introduction, see J. Rifkin, *Entropy, A New World-View*, (New York, 1980).
102. In a sarcastic poem of the prophet Isaiah on the imagined fall of the Babylonian empire the trees clap their hands because no hewer comes to cut them.
103. See Michael Rowbotham, *The Grip of Death, A Study of Modern Money, Debt Slavery and Destructive Economics* (Charbury, Carpenter, 1998).
104. See Elizabeth Dere, "Debt and Ecological Disaster in Latin America", in *Race and Class*, July-Sept. 1992.

105. Cf. Bastiaan Wielenga, "Capitalism and Ecology" in *COELI*, Nr. 68, Winter 1993-94.
106. Maria Mies, *Women: The Last Colony* (New Delhi, 1988).
107. In the early nineties when the ex-GDR was about to be absorbed into West Germany, there were detailed proposals from eco-groups to utilise this unique opportunity of setting up a decentralised energy system. The giant companies of the West vehemently opposed any experiment in such a direction.
108. See Brewster Kneen, *From Land to Mouth: Understanding the Food System* (Canada, 1991).
109. E. Altwater, *The Future of the Market, An Essay on the Regulation of Money and Nature after the Collapse of 'Actually Existing Socialism'* (London, 1993), p. 198 ff.
110. Altwater, op. cit., p. 203.

Chapter IV

1. Arne Naess, "The Shallow and the Deep, Long-Range Ecology Movement: A Summary", in *Inquiry* No. 16, 1973. See also Interview with Arne Naess by Andrew Light in *CNS* No. 29, March 1997.
2. An overview can be found in Bill Deval and George Sessions, *Deep Ecology, Living as if Nature Mattered* (Salt Lake City, Perequine Smith Books, 1985).
3. Interview, *CNS* 29, op. cit., p. 77.
4. A helpful summary can be found in Rosi Braidotti, *Women, the Environment and Sustainable Development, Towards a Theoretical Synthesis* (London, ZED Books/INSTRAW, 1994), ch. 8.
5. This charge of Bookchin has been refuted by Naes. See Interview in *CNS* 29, op. cit.
6. See references in Braidotti, op. cit., p. 151f and notes.
7. James Lovelock, *Gaia, A New Look on Life on Earth* (London, OUP, 1979).
8. Edward Goldsmith, "The Way: An Ecological World-View" in *The Ecologist*, Vol. 18, 4-5, 1988.
9. Ramachandra Guha and Juan Martinez-Alier, *Varieties of Environmentalism, Essays North and South* (Delhi, OUP, 1998), especially ch. 5 "Radical American Environmentalism and Wilderness Preservation: A Third World Critique".

10. Ibid., p. 83.
11. Ibid., p. 96.
12. Ibid., p. 97 f.
13. See Guha in Guha/Martinez-Alier, op. cit., ch. 8, "Mahatma Gandhi and the Environmental Movement".
14. Quoted ibid., p. 156.
15. Quoted ibid., p. 158.
16. See J.C. Kumarappa, *Economy of Permanence* (Varanasi, 1984).
17. This has been traced and documented by Solomon Victus of the Centre for Social Analysis, Madurai, in his doctoral work on Kumarappa.
18. Op. cit., p. 80 f.
19. Quoted by Guha, op. cit., p. 159.
20. Murray Bookchin, *Remaking Society* (Montreal, Black Rose Books, 1989). For a survey of his thought see Rosi Braidotti, op. cit., p. 155 ff.
21. Bookchin, op. cit., p. 9.
22. Bookchin refers in that connection to David Ehrenfeld, *The Arrogance of Humanism* (New York, OUP, 1978).
23. Ibid., p. 13.
24. Braidotti, op. cit., p. 157 f.
25. John Clark, "A Social Ecology" in *Capitalism Nature Socialism*, No. 31, Sept. 1997.
26. John Clark (ed.), *Renewing the Earth, The Promise of Social Ecology, A Celebration of the Work of Murray Bookchin* (London, Green Print, 1990). Quoted in Braidotti, ibid.
27. Bookchin, op. cit., p. 165 ff. For a critique of Bookchin's theories from within a libertarian ecological orientation, see David Watson, *Beyond Bookchin, Preface for a Future Social Ecology* (Detroit, Fifth Estate, 1996).
28. See for such a critique Joel Kovel, "Negating Bookchin" in *Capitalism Nature Socialism*, No. 29, March 1997.
29. The relationship to anarchism is analysed by David Pepper, *Eco-Socialism, From Deep Ecology to Social Justice* (London, Routledge, 1993), esp. ch. 4.
30. John Clark, "A Social Ecology", op. cit., p. 4 ff.
31. Guha/Martinez-Alier, op. cit., chs. 10 and 7.
32. John Clark, op. cit., p. 26 ff.

33. For a more extensive discussion, see B. Wielenga, *The Failure of Perestroika in the Light of History* (Mavelikara, Vichara, 1991).
34. See Martinez-Alier in Guha/Martinez Alier, *Varieties of Environmentalism*, op. cit., p. 25, cf. Letters of Engels to Marx, 19 and 22 Dec. 1882.
35. Letter to Engels 25.3.1868 in *Marx/Engels, Selected Correspondence* (Moscow, 1975), p. 189, cf. Michael Loewy, *On Changing the World* (New Jersey, Humanities Press, 1993), p. 156 ff.
36. See T. Shanin (ed.), *Late Marx and the Russian Road* (New York, 1983), p. 111 ff.
37. Ibid., p. 118.
38. See especially the ongoing discussions in *Capitalism Nature Socialism, A Journal of Socialist Ecology* whose editorial board has editorial groups in Boston, California, Toronto, UK and editors-at-large in many places, including Ramachandra Guha and Martinez-Alier. The UK editor Ted Benton has triggered off an important discussion in *New Left Review*, "Marxism and Natural Limits, An Ecological Critique and Reconstruction" Nr. 178, Nov.-Dec. 1989; Reiner Grundmann, "The Ecological Challenge to Marxism", Nr. 187, May-June 1991; Ted Benton, "Ecology, Socialism and the Mastery of Nature", Nr. 194, July-Aug. 1992.
39. Benton, *New Left Review*, Nr. 178.
40. See James O'Connor, "Capitalism, Nature, Socialism, A Theoretical Introduction" in *CNS*, Nr. One, Fall 1988, and further contributions in later issues.
41. Karl Marx, *Capital I* (Penguin), p. 637 f, cf. B. Wielenga, *Introduction to Marxism* (CSA, Bangalore, 1984), p. 94.
42. See Martin O'Connor, "On the Misadventures of Capitalist Nature" in *CNS*, Sept. 1993.
43. Carolyn Merchant, *The Death of Nature, Women, Ecology and the Scientific Revolution* (London, 1980).
44. Francis Bacon, *The New Organon and Related Writings* (New York, 1960), p. 25.
45. Ibid., p. 102.
46. Ibid., p. 113.
47. For a more detailed discussion, see Merchant, op. cit., esp. Ch.7 "Dominion and Nature".

48. Ibid., p. 172.
49. Vandana Shiva, *Staying Alive, Women, Ecology and Survival in India* (New Delhi, Kali for Women, 1988), p. 38 f.
50. A survey of discussions can be found in Chhaya Datar, *In Search of Feminist Theory, Subordination of Women's Labour and Environmental Degradation*, SNDT thesis 1995, esp. Ch. IV. For Vandana Shiva's critique of reductionist science, see Maria Mies/Vandana Shiva, *Eco-Feminism* (London, Zed Books, 1993), ch. 2.
51. For a survey see Braidotti, op. cit., pp. 161 ff.
52. Ibid., p. 163 f.
53. This is also true for Vandana Shiva, though she sometimes argues in an essentialist manner with references to feminine spirituality.
54. Maria Mies, V. Bennholdt-Thomsen and C.V. Werlhof, *Women the Last Colony* (New Delhi, Kali for Women, 1988).
55. Gabriele Dietrich, "Development, Ecology and Women's Struggles" in *Social Action*, Jan.-March 1988, p. 6. See further her book, *Reflections on the Women's Movement in India, Religion, Ecology, Development* (New Delhi, 1992).
56. See Mies/Shiva, op. cit., esp. Ch. 20 "The Need for a New Vision: The Subsistence Perspective".
57. See Vandana Shiva, *Staying Alive*, op. cit., and Maria Mies/Shiva, op. cit., Introduction.
58. See Interview by Andrew Light, in *CNS*, Nr. 29, March 1997.
59. See John Clark, "A Social Ecology" in *CNS* Nr. 31, Sept. 1997.
60. Grundmann, op. cit., *NLR* 187. See also the argument of Herman E. Daly and John B. Cobb Jr., *For the Common Good, Redirecting the Economy towards Community, the Environment and a Sustainable Future* (London, 1990), p. 387 f.
61. Ted Benton, op. cit., *NLR* 194, p. 67.
62. Ibid., p. 68.
63. Daly/Cobb, op. cit., ch. 20.
64. See e.g. Eric J. Lott, "India's Religious Resources for a Global Eco-theology" in J. Bandyopadhyay et al., *India's Environment, Crises and Responses* (Dehra Dun, 1985), ch. 11; and Ashgar Ali Engineer, "Islam and Ecological Issues" in *Progressive Perspective*, Vol. 1, No. 2, (Mumbai, Institute of Islamic Studies, 1992).
65. In the biblical creation stories, we find the eco-context of Mesopotamia

with its rivers in Genesis 1 and its dry land cultivation and dependency on rain in Genesis 2.

66. See e.g. H.P. Santmire, *The Travail of Nature, The Ambiguous Ecological Promise of Christian Theology* (Philadelphia, 1985).
67. Aloysius Pieris distinguishes "cosmic" and "meta-cosmic" religions. See his book, *An Asian Theology of Liberation* (New York, Orbis, 1988).
68. See A. Wati Longchar, *The Traditional Tribal Worldview and Modernity* (Jorhat, ETC, 1995).
69. See *Concilium* 1995/5, articles on "Ecology and Poverty".
70. Llyn White, Jr., "The Historical Roots of Ecological Crisis" in *Science* 155 (1967), p. 1203-7.
71. Especially Gen. 1, 26-28.
72. Gen. 1, 9.20 & 24.
73. Gen. 2, 15.
74. Cf. Gen. 1, 29-31 and Gen. 9, 2-4.
75. Isaiah 11, 6-9.
76. Gen. 9, 8 ff.
77. Psalm 104, 14-15, cf. The hymn to Earth in Atharva Veda, quoted by Eric Lott, op. cit., p. 178.
78. Ibid., Psalm 104, 16-18.
79. Ibid., Psalm 104, 29-30.
80. Ibid., quoted by Eric Lott, p. 179.
81. Job 28.
82. Exodus 20, 10, etc.
83. Ex. 23, 10-11.
84. Leviticus 25-26.
85. Luke 4, 18-19.
86. Matthew 6, 24-34.
87. Daly/Cobb, *For the Common Good* and Bookchin, *Remaking Society*, for example fail to discuss the problem.
88. For an analysis of modern consumer society, see W.F. Haug, *Critique of Commodity Aesthetics, Appearance Sexuality and Advertising in Capitalist Society* (Cambridge, 1971) and William Leiss, *The Limits to Satisfaction, An Essay on the Problem of Needs and Commodities* (Kingston, 1988).
89. See C.T. Kurien, *The Economy* (New Delhi, 1992), ch. 6.

90. See more extensively, B. Wielenga, *Introduction to Marxism* (CSA, Bangalore, 1984), p. 95-102.
91. Marx/Engels, *Collected Works*, Vol. 3, 309.
92. Ibid., p. 304.
93. As referred to by Maria Mies in Mies/Shiva, op. cit., ch.17, "Liberating the Consumer".
94. Ibid., p. 255.
95. C.T. Kurien, *The Economy*, op. cit., e.g. p. 103 f. & 155 f.

Chapter V

1. In the early days of the Soviet Union attempts were made in this direction. See Arran Gare, "Soviet Environmentalism: The Path Not Taken", in *CNS*, Dec. 1993.
2. C.T. Kurien, *Poverty, Planning and Social Transformation* (New Delhi, 1978).
3. See Juan Martinez-Alier, "Environmental Justice (Local and Global)" in *CNS* 29, March 1997. See also *New Internationalist*, No. 313, June 1999.
4. Kate Soper, "Human Needs and Natural Relations: The Dilemmas of Ecology I" in *CNS* Nr. 32, Dec. 1997.
5. Jan Timmer, director of Philips in an interview in the Dutch press.
6. The concept was introduced in the Brundtland Report, *Our Common Future*, written by the World Commission on Environment and Development (Delhi, OUP, 1987). It played a big role in the UNCED conference in 1992.
7. E.g. the group of Lisbon.
8. See John Bellamy Foster, "The Limits of Environmentalism without Class: Lessons from the Ancient Forest Struggle of the Pacific Northwest" in *CNS* 13, March 1993.
9. See Paul Almeida "The Network for Environmental and Economic Justice in the Southwest: Interview with Richard Moore", in *CNS* 17, March 1994. See also Barbara Epstein, "The Environmental Justice/Toxics Movement: Politics of Race and Gender" in *CNS* 31, Sept. 1997.
10. See Sharad G. Line, "Shankar Guha Nyogi: Beyond Conventional Trade Unionism in India" in *Bulletin of Concerned Asian Scholars*, July-Sept. 1992.
11. For further reflections on people's movements and policies, see Part III

- of Dietrich/Wielenga, *Towards Understanding Indian Society*, op. cit.
12. Arundhati Roy, "The Greater Common Good: the Human Cost of Big Dams" in *Frontline*, June 4, 1999.
 13. J. Mohan Rao, "Economic Reform and Ecological Refurbishment, A Strategy for India" in *EPW*, July 15, 1995.
 14. Victor Wallis, "Ecological Socialism and Human Needs" in *CNS*, Nr. 32, Dec. 1997.
 15. Arundhati Roy, op. cit.
 16. See *Bulletin of Concerned Asian Scholars*, April-June 1993.
 17. For an analysis of the dilemmas, see Saral Sarkar, *Green-Alternative Politics in West Germany*, Vol. II *The Greens* (New Delhi, 1994).
 18. John Pilger, *Hidden Agendas* (London, 1998), p. 334 ff., and Mukul, "Liverpool Dockers; Making and Un-making of a Struggle" in *EPW*, June 27, 1998.
 19. Cf. B. Wielenga, "Reorienting our Hopes?" in *COELI*, No. 67, Autumn 1993, or in *Voices from the Third World*, EATWOT, Dec. 1994.

The first part of the history of the
the second part of the history of the
the third part of the history of the
the fourth part of the history of the
the fifth part of the history of the
the sixth part of the history of the
the seventh part of the history of the
the eighth part of the history of the
the ninth part of the history of the
the tenth part of the history of the

The eleventh part of the history of the
the twelfth part of the history of the
the thirteenth part of the history of the
the fourteenth part of the history of the
the fifteenth part of the history of the
the sixteenth part of the history of the
the seventeenth part of the history of the
the eighteenth part of the history of the
the nineteenth part of the history of the
the twentieth part of the history of the

The twenty-first part of the history of the
the twenty-second part of the history of the
the twenty-third part of the history of the
the twenty-fourth part of the history of the
the twenty-fifth part of the history of the
the twenty-sixth part of the history of the
the twenty-seventh part of the history of the
the twenty-eighth part of the history of the
the twenty-ninth part of the history of the
the thirtieth part of the history of the

The thirty-first part of the history of the
the thirty-second part of the history of the
the thirty-third part of the history of the
the thirty-fourth part of the history of the
the thirty-fifth part of the history of the
the thirty-sixth part of the history of the
the thirty-seventh part of the history of the
the thirty-eighth part of the history of the
the thirty-ninth part of the history of the
the fortieth part of the history of the

The forty-first part of the history of the
the forty-second part of the history of the
the forty-third part of the history of the
the forty-fourth part of the history of the
the forty-fifth part of the history of the
the forty-sixth part of the history of the
the forty-seventh part of the history of the
the forty-eighth part of the history of the
the forty-ninth part of the history of the
the fiftieth part of the history of the

The fifty-first part of the history of the
the fifty-second part of the history of the
the fifty-third part of the history of the
the fifty-fourth part of the history of the
the fifty-fifth part of the history of the
the fifty-sixth part of the history of the
the fifty-seventh part of the history of the
the fifty-eighth part of the history of the
the fifty-ninth part of the history of the
the sixtieth part of the history of the

BIBLIOGRAPHY

1. Bertell Rosali, "No Immediate Danger", The Women's Press, London, 1985.
2. Braidotti Rosi, "Women, the Environment and Sustainable Development", London, 1994.
3. Datye K.R. et al., "Banking on Biomass, A New Strategy for Sustainable Prosperity Based on Renewable Energy and Dispersed Industrialisation", Centre for Environment Education, Ahmedabad, 1998.
4. Dietrich Gabriele, "Reflections on the Women's Movement in India, Religion, Ecology, Development", New Delhi, 1992.
5. Dietrich G. and B. Wielenga, "Towards Understanding Indian Society", Madurai, 1998.
6. Gadgil Madhav and Guha Ramachandra, "Ecology and Equity", Penguin, New Delhi, 1995.
7. -- --, "This Fissured Land, An Ecological History of India", OUP, New Delhi, 1993.
8. Guha Ramachandra and Juan Martinez-Alier, "Varieties of Environmentalism", OUP, Delhi, 1998.
9. Kneen Brewster, "Farmageddon, Food and the Culture of Biotechnology", New Society Publication, P.O. Box 189, Gabriola Island, BC VOR IXO, Canada, 1999.
10. Merchant Carolyn, "The Death of Nature, Women, Ecology and the Scientific Revolution", London, 1980.
11. Mies Maria and Vandana Shiva, "Ecofeminism", London, 1993.
12. Rifkin J., "Entropy, A New World-View", New York, 1980.
13. Rowbotham Michael, "The Grip of Death, A Study of Modern Money, Debt Slavery and Destructive Economics", Carpenter, Charbury, 1998.
14. Rowell Andrew, "Green Backlash, Global Subversion of the Environmental Movement", Routledge, London, 1996.

Journals

1. "Anumukti", Sampoorana Kranti Vidyalaya, Vedchhi, 394 641, India. Tel: 02625-20074.
2. "Capitalism Nature Socialism", Guilford Publications, Department 5R, 72 Spring St., New York, NY 10012. Fax: 212-966-6708.
3. "Down to Earth", Centre for Science and Environment, 41 Tughlakabad Institutional Area, New Delhi – 110 062. Tel: 91-11-6981110, Fax: 91-11-6985879.
4. "The Ecologist Asia", 602 Maker Chambers, V. Nariman Point, Mumbai – 400 021.
5. "Lokayan Bulletin", 13, Alipur Road, Delhi – 110 054. Tel: 011-3951378.
6. "The Ram's Horn", S-6, C-27, R.R. 1, Sorrento BC, VOE 2WO, Canada.
7. "Third World Resurgence", The Other India Bookstore, Above Mapusa Clinic, Mapusa – 403 507, Goa, India.

The first part of the chapter discusses the importance of understanding the market and the competition. It emphasizes the need for a thorough analysis of the market environment, including the identification of opportunities and threats. The second part of the chapter focuses on the development of a marketing strategy, which involves setting clear objectives and determining the most effective ways to achieve them. The third part of the chapter discusses the implementation of the marketing strategy, which requires a coordinated effort across all departments of the organization. The fourth part of the chapter discusses the evaluation of the marketing strategy, which involves monitoring the results of the strategy and making adjustments as needed. The fifth part of the chapter discusses the importance of a strong marketing team, which is essential for the successful implementation of the marketing strategy. The sixth part of the chapter discusses the importance of a strong marketing budget, which is essential for the successful implementation of the marketing strategy. The seventh part of the chapter discusses the importance of a strong marketing plan, which is essential for the successful implementation of the marketing strategy. The eighth part of the chapter discusses the importance of a strong marketing strategy, which is essential for the successful implementation of the marketing strategy. The ninth part of the chapter discusses the importance of a strong marketing team, which is essential for the successful implementation of the marketing strategy. The tenth part of the chapter discusses the importance of a strong marketing budget, which is essential for the successful implementation of the marketing strategy. The eleventh part of the chapter discusses the importance of a strong marketing plan, which is essential for the successful implementation of the marketing strategy. The twelfth part of the chapter discusses the importance of a strong marketing strategy, which is essential for the successful implementation of the marketing strategy.

CSA PUBLICATIONS

I. FIRST SERIES: BOOKLETS

1. The Development Debate (58 pages); 2. Methods of Societal Analysis (82 pages); 3. British Rule (80 pages); 4. The Independence Movement (72 pages); 5. Caste in India Today (108 pages); 6. Indian Political Parties and Ideologies (68 pages); 7. Culture, Religion and Development (86 pages); 8. The Church and Social Justice (76 pages); 9. Health Care in India (144 pages); 10. Development, Human Rights & Action Groups (132 pages). * Nos. 1 to 8: Rs 9 each; Nos. 9-10: Rs 17 each; **Whole series**: Rs 100 (postage included).

II. SECOND SERIES: BOOKS

1. Christ the Liberator (300 pages) : Rs 35; 2. Introduction to Marxism (375 pages) : Rs 40; 3. Education for Social Change (440 pages) : Rs 55; 4. India Today (215 pages) : Rs 25; 5. Social Movements, Towards a Perspective (230 pages) : Rs 30; 6. Rakku's Story: Structures of Ill-Health and the Source of Change (235 pages) : Rs 30; **The India We Want to Build**: 7. Vol. I. The Overall Background (325 pages) : Rs 40; 8. Vol. II. Perspectives for a Better India (690 pages) : Rs 80; 9. Towards a New India (204 pages) : Rs 25; 10. The Social Teachings of the Church (780 pages) : Rs 75; * **Whole series** : Rs 425 for the 10 books (including about Rs 40 for postage/registration).

III. THIRD SERIES: CURRENT ISSUES

1. Dimensions of Globalisation (190 pages) : Rs 50; 2. Social Action Groups and Their Activists (192 pages) : Rs 75; 3. Towards an Eco-Just Society (192 pages): Rs 60; **For these 3 published books**: Rs 150 (postage included); **PRE-PUBLICATION ORDERS**: 4. India's Growing Slums (to be published in late 1999, about 300 pages) : Rs 80; 5. The Dalit World (late 2000, about 200 pages) : Rs 60; 6. Social Spirituality (late 2001, about 150 pages) : Rs 40; * **Whole Series** : Rs 290 for the 6 books (postage included).

IV. Series I & II : Rs 500 (including about Rs 50 for postage/registration).

- V. **Series I, II & III: Rs 775 (postage included).**
- VI. **Reduction of 15% for each order of 5 copies or more of the same booklet/book, but not of the series.**
- VII. **Special offer for 10 Selected Books: Series I nos. 9 & 10; Series II nos. 3, 5, 8 & 9; and Series III nos. 1, 2, 3 & 4. For these 10 books: Rs 400 (postage included).**

FOR ORDERS AND CORRESPONDENCE

All orders are payable in advance, preferably by demand drafts or money orders. Please, add Rs 15 for outstation cheques. All payments must be made **in the name of "Centre for Social Action"**. **PLEASE WRITE TO: CENTRE FOR SOCIAL ACTION, NO. 849 RAMDEV GARDENS, KACHARAKANAHALLI, BANGALORE - 560 084.**

These booklets and books provide a non-technical, but comprehensive introduction for people who are searching to deepen their reflection and action. They are addressed to all, irrespective of caste, creed and religion. With a bibliography and material for personal and group study, they constitute excellent instruments for concrete work.

SUBSCRIPTION TO BSA REVIEW

Integral Liberation

(64 or 72-page Quarterly on Social Issues)

INDIA	Single Copy	One Yr.	Two Yrs.	Three Yrs.	Life (support)
Personal	Rs 15	Rs 55	Rs 100	Rs 140	Rs 1000
Institutional	Rs 20	Rs 75	Rs 140	Rs 200	Rs 1000

Subscriptions may date from any issue, and are payable in advance. The payments should preferably be by DD/MO. Add Rs 10 for outstation cheques. All payments must be made **in the name of "Bangalore Social Action Trust"**. *We will send an official receipt and a subscription number to each subscriber.* **OUR ADDRESS: THE MANAGER, Bangalore Social Action Trust, 849 Ramdev Gardens, Kacharakanahalli, Bangalore - 560 084.**

TOWARDS AN ECO-JUST SOCIETY

Eco-problems are multiplying and merging into global threats. The pollution of air and water, the depletion of resources and the hasty introduction of new technologies such as those of genetic engineering are together pushing humankind and the planet earth to the brink of an unmanageable eco-crisis.

Eco-movements are responding to this major threat in various ways. Their struggles have to be integrated with the struggles for social justice and people's control over resources. A radical re-orientation is imperative along with a revolutionary reversal which breaks the chains that keep the globe in bondage to capital. We need liberation from capital's reinforcement of the structures of patriarchy and caste, its debt regime, control over science and technology, and tyranny over our minds through the media.

It is not enough to personally maintain an eco-friendly lifestyle. Struggles have to be fought as in the Narmada Valley, and against Monsanto and its terminator technology, in order to stop destructive development and initiate an alternative development, which will lead to a just and sustainable economy and society. This will require many small steps and many confrontations with the powers that be.

ABOUT THE AUTHOR

Bas Wielenga (1936) works on the staff of the Centre for Social Analysis, Tamilnadu Theological Seminary, Madurai. He has published several books and articles in the fields of Marxist theory, Christian-Marxist dialogue, politics, theology and ecology. His **It's a Long Road to Freedom** (Madurai, 1998³) discusses perspectives of biblical theology, and **Towards Understanding Indian Society** (Madurai, 1998²), co-authored with Gabriele Dietrich and the team of the Centre for Social Analysis, relates social analysis to social movements and alternative development perspectives. He has also written **Introduction to Marxism** (Centre for Social Action, Bangalore, 1991²).